DSC-P32

SERVICE MANUAL

LEVEL 1

Ver 1.0 2003. 02

Revision History

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

Link

SPECIFICATIONS | SELF DIAGNOSIS FUNCTION | ORNAMENTAL PARTS

- INSTRUCTION MANUAL is shown at the end of this document.

DIGITAL STILL CAMERA

SONY

DSC-P32

COVER

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

MEMORY STICK

SPECIFICATIONS

■ Camera

[System]

Image device 6.67 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera
Approx. 3 340 000 pixels

Effective pixels number of camera
Approx. 3 210 000 pixels

Lens Single focal lens
f=5.0 mm
(35 mm camera conversion: 33 mm ($1\ ^{5}/_{16}$ inches))
F2.8

Exposure control
Automatic, Program, Twilight, Twilight portrait, Landscape, Snow, Beach

White balance Automatic, Daylight, Cloudy, Fluorescent, Incandescent

File format (DCF compliant)
Still images: Exif Ver. 2.2, JPEG compliant, GIF (for Clip Motion), DPOF compatible
Audio with still image: MPEG1 compliant (Monaural)
Movies: MPEG1 compliant (Monaural)

Recording media
"Memory Stick"

Flash Recommended distance
0.5 to 3.8 m ($19\ ^{3}/_{4}$ inches to 12 feet $5\ ^{19}/_{32}$ inches)
(when ISO sensitivity is set to Auto)

[Output connectors]

A/V OUT (MONO) jack (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance 2.2 kΩ

USB jack mini-B

[LCD screen]

LCD panel used
4.0 cm (1.6 type) TFT drive

Total number of dots
61 600 (280×220) dots

[Power, general]

Power AA nickel hydride batteries (2)
2.4 V
AC-LS5 AC Adaptor (not supplied), 4.2 V

Power consumption (when recording)
1.7W

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $101.3 \times 57.7 \times 32.6$ mm ($4 \times 2\ ^{3}/_{8} \times 1\ ^{5}/_{16}$ inches)
(W/H/D, protruding portions not included)

Mass Approx. 217 g (7.7 oz) (two batteries, "Memory Stick" and wrist strap included)

Microphone Electret condenser microphone

Speaker Dynamic speaker

■ BC-CS2A/CS2B Ni-MH battery charger

Power requirements
AC 100 to 240V 50/60Hz
3 W

Output voltage
AA : DC 1.4 V 400 mA × 2
AAA : DC 1.4 V 160 mA × 2

Operating temperature range
0° to +40°C (32° to +104°F)

Dimensions $71 \times 30 \times 91$ mm ($2\ ^{7}/_{8} \times 1\ ^{3}/_{16} \times 3\ ^{5}/_{8}$ inches) (W/H/D)

Mass Approx. 90 g (3 oz)

■ AC-LS5 AC Adaptor (not supplied)

Power requirements
AC 100 to 240 V, 50/60 Hz
11 W 0.16 to 0.09 A

Rated output voltage
DC 4.2 V, 1.5 A

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $48 \times 29 \times 81$ mm ($1\ ^{15}/_{16} \times 1\ ^{3}/_{16}$ $3\ ^{1}/_{4}$ inches) (W/H/D, protruding parts not included)

Mass Approx. 180 g (6 oz)
(adaptor only)

Accessories

HR6 (size AA) Ni-MH batteries (2)
Battery case
BC-CS2A/CS2B Ni-MH Battery charger (1)
Power cord (mains lead) (1)
USB cable (1)
A/V connecting cable (1)
Wrist strap (1)
"Memory Stick" (16MB) (1)
CD-ROM (USB driver: SPVD-010) (1)
Operating Instructions (1)

Design and specifications are subject to change without notice.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

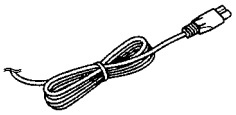
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

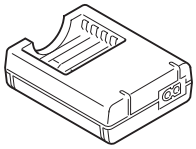
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

Checking supplied accessories.

Make sure that the following accessories are supplied with your camcorder.

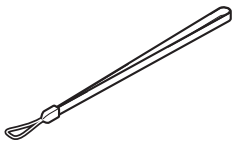


Power cord (1)(AUS model)
⚠ 1-696-819-21
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-779-985-11

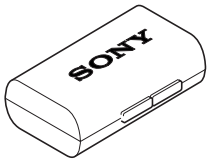


Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-32

Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

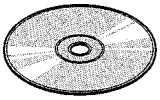


Hand strap (1)
3-070-841-01

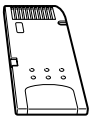


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

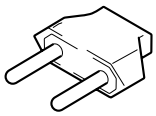


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,
CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

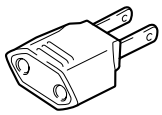


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH
batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

- Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	J	: Japanese model
CH	: Chinese model		

Other accessories

3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH) (US,CND,AEP,UK,E,HK,AUS,CH,JE)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP,JE)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)
3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP,JE)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR,JE)

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

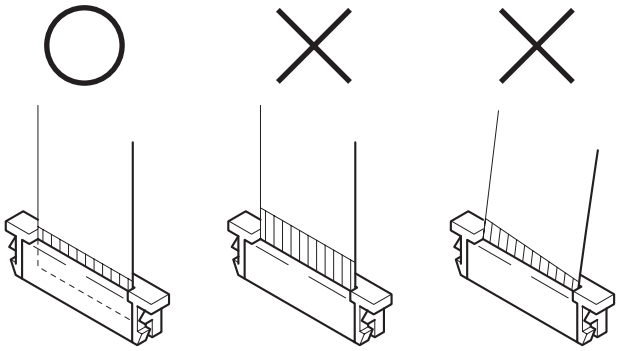
1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

COVER

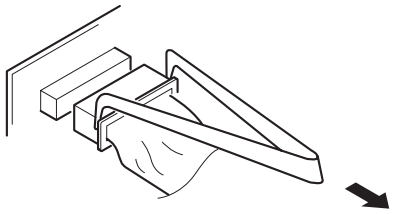
SELF-DIAGNOSIS FUNCTION

• NOTE FOR REPAIR

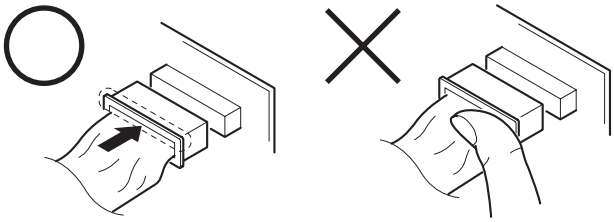
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



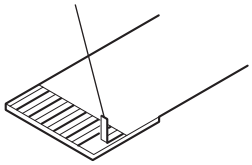
When remove a connector, don't pull at wire of connector.
Be in danger of the snapping of a wire.



When installing a connector, don't press down at wire of connector.
Be in danger of the snapping of a wire.



Cut and remove the part of gilt which comes off at the point. (Take care that there are some pieces of gilt left inside)

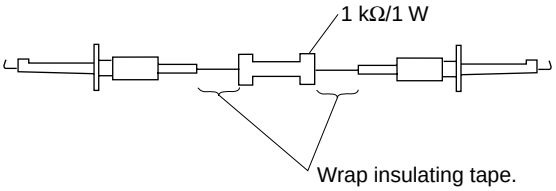


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the capacitor is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the DSC-P32 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

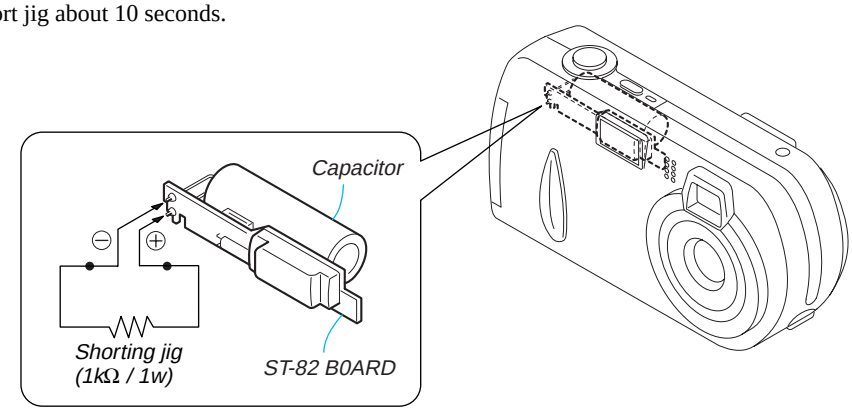
Preparing the Short Jig

To preparing the short jig. a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11)
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

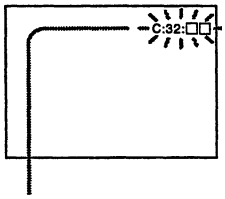
Short circuits between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□: □□
  The contents which can be handled by customer, are displayed.
- E: □□: □□
  The contents which can be handled by engineer, are displayed.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Turn off the main power then back on.	Trouble with hardware.	SYSTEM ERROR
C:13:01	Replace the memory stick. Format the memory stick with the DSC-P32.	• The type of memory stick that cannot be used by this machine, is inserted. • Data is damaged. • Unformatted memory stick is inserted.	MS ERROR
E:91:01	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	Flash LED Flash display Flashing at 3.2 Hz
E:61:00 *1	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10 *1			

Note : The error code is cleared if the battery is removed, except defective flash unit.
*1: The error display is given in two ways.

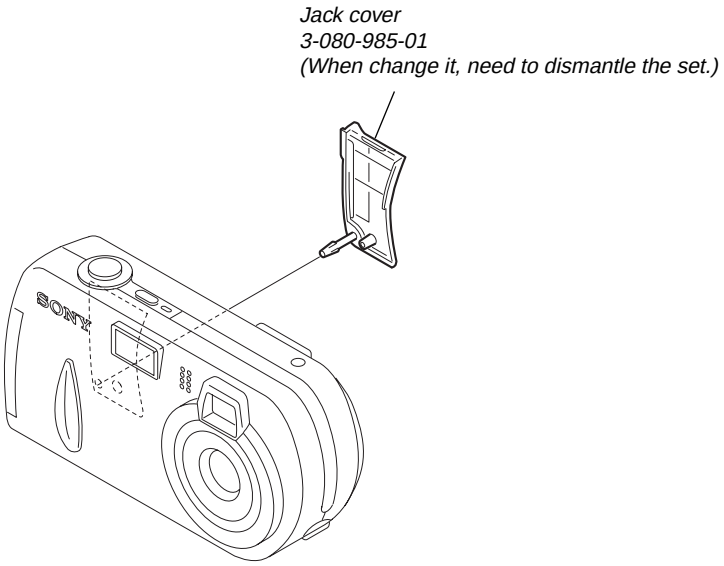
COVER

MAIN PARTS

Note:

- The parts numbers of such as a cabinet are also appeared in this section.
  Refer to the parts number mentioned below the name of parts to order.

1. ORNAMENTAL PARTS



9-876-228-41

Sony EMCS Co.

2003B1600-1
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Published by DI Customer Center

SONY

Digital Still Camera

Operating Instructions

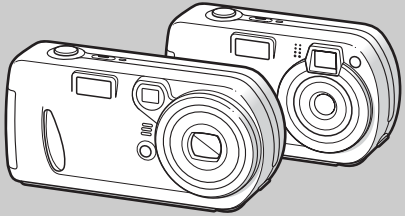
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. DSC-P32/P72

Serial No. _____



Cyber-shot
Digital Still Camera

MEMORY STICK ™

DSC-P32/P72

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3-080-877-**12**(1)

Getting started

Shooting still images

Viewing still images

Deleting still images

Before advanced operations

Advanced still image shooting

Advanced still image viewing

Still image editing

Enjoying movies

Enjoying images on your computer

Troubleshooting

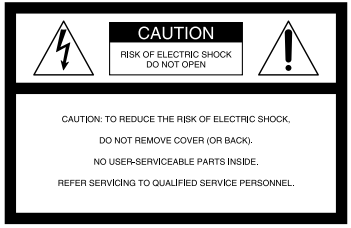
Additional information

Index

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

For the Customers in the U.S.A.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

If you have any questions about this product, you may call:
Sony Customer Information Services Center
1-800-222-SONY (7669)

The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity

Trade Name:	SONY
Model No.:	DSC-P32
Responsible Party:	Sony Electronics Inc.
Address:	680 Kinderkamack Road, Oradell, NJ 07649 USA
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DSC-P72
Responsible Party:	Sony Electronics Inc.
Address:	680 Kinderkamack Road, Oradell, NJ 07649 USA
Telephone No.:	201-930-6972

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the Customers in the U.S.A. and Canada

RECYCLING NICKEL METAL HYDRIDE BATTERIES

Nickel Metal Hydride batteries are recyclable.
You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit http://www.rbrc.org/

Caution: Do not handle damaged or leaking Nickel Metal Hydride batteries.

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Notice on the supplied battery charger for the customers in the United Kingdom

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.
Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS 1362, (i.e., marked with ⓐ or ⓑ mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

For the Customers in Europe

This product has been tested and found compliant with the limits sets out in the EMC Directive for using connection cables shorter than 3 meters.

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this digital camera.

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the USB cable again.

For the Customers in the U.S.A. and Canada

THIS CLASS B DIGITAL DEVICE COMPLIES WITH PART 15 OF THE FCC RULES AND THE CANADIAN ICES-003 OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Trial recording

Before you record one-time events, you may want to make a trial recording to make sure that the camera is working correctly.

No compensation for contents of the recording

Contents of the recording cannot be compensated for if recording or playback is not possible due to a malfunction of your camera or recording medium, etc.

Back up recommendation

To avoid the potential risk of data loss, always copy (back up) data to a disk.

Notes on image data compatibility

- This camera conforms with the Design rule for Camera File system universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association).
- Playback of images recorded with your camera on other equipment and playback of images recorded or edited with other equipment on your camera are not guaranteed.

Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Do not shake or strike the camera

In addition to malfunctions and inability to record images, this may render the “Memory Stick” unusable or image data breakdown, damage or loss may occur.

LCD screen, LCD finder (only models with a LCD finder) and lens

- The LCD screen and the LCD finder are manufactured using extremely high-precision technology so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the LCD finder. These points are normal in the manufacturing process and do not affect the recording in any way.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions.
- Do not press the LCD screen hardly. The screen may be uneven and that may cause a malfunction.
- Images may be trailed on the LCD screen in a cold location. This is not a malfunction.

The power zoom lens (for the DSC-P72 only)

This camera is equipped with power zoom lens. Be careful not to bump the lens, and be careful not to apply force to it.

The flash

Do not allow the flash emitter to become dirty, as this may cause the flash emitter to become hotter than normal and result in malfunction.

Do not get the camera wet

When taking pictures outdoors in the rain or under similar conditions, be careful not to get the camera wet. If moisture condensation occurs, see page 108 and follow the instructions on how to remove it before using the camera.

Do not expose the camera to sand or dust

Using the camera in sandy or dusty locations may cause a malfunction.

Do not aim the camera at the sun or other bright light

This may cause irrecoverable damage to your eyes or the malfunction of your camera.

Notes on locations where you can use the camera

- Do not use the camera near a location that generates strong radio waves or emits radiation. The camera may not be able to record or play back properly.
- Do not use the camera near a TV, radio, or tuner. This may cause noise to interfere the camera.

The pictures used in this manual

The photographs used as examples of pictures in this manual are reproduced images, and are not actual images shot using this camera.

The illustrations and screen status used in this manual

The illustrations and screen status used in this manual are of the DSC-P72 unless noted otherwise.

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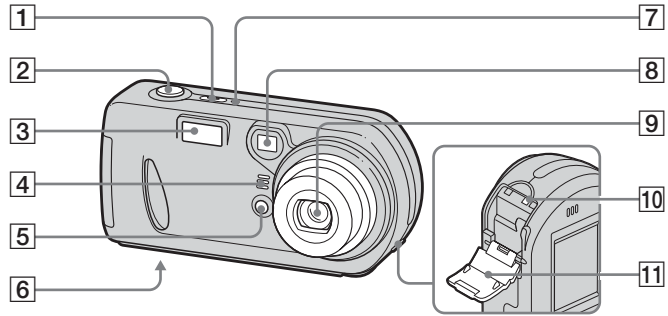
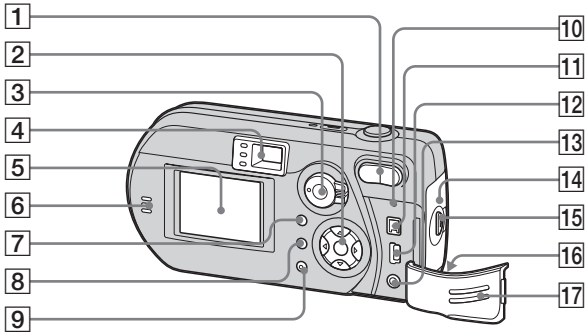
(DSC-P72)



1 **POWER button** (20)
2 **Shutter button** (26)
3 **Flash** (32)
4 **Microphone**
5 **Self-timer lamp** (31)**/ AF illuminator** (33)
6 **Tripod receptacle (bottom surface)**
7 **POWER lamp** (20)
8 **Finder window**
9 **Lens**
10 **Access lamp** (23)
11 **"Memory Stick" cover** (23)

• "3.2MEGA PIXELS" shown on the surface of the camera is the number of effective pixels of the CCD. However, the maximum number of pixels recorded is 3.1 mega pixels. The indication of the number of effective pixels of the CCD is a recommendation of the JCIA (Japan Camera Industry Association).

• Use a tripod with a screw length of less than 5.5 mm (7/32 inch). You will be unable to firmly secure the camera to tripods having longer screws, and may damage the camera.

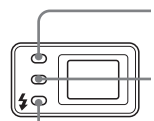


1 **Zoom buttons (during shooting)** (29)**/Index buttons (during playback)** (37)

2 **Control button (Menu on) (▲/▼/◄/►/●)** (20)**/ (Menu off) (/ / /)** (32/31/28/30)

3 **Mode selector** (21)
►: To view or edit images
: To shoot still images
: To shoot movies/Clip Motion images/Multi Burst mode images
SET UP: To set the SET UP items

4 **Finder** (34)



Self-timer/recording lamp (red) (31/27)

AE/AF lock lamp (green) (26)

(Flash charge) lamp (orange) (32)

5 **LCD screen**

6 **Speaker**

7 **MENU button** (102)

8 **(LCD status/LCD on/off) button** (34)

9 **/ (Image Size/Delete) button** (24/40)

10 **RESET button** (91)

11 **DC IN jack** (19)

12 **(USB) jack** (82)

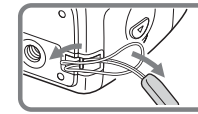
13 **A/V OUT (MONO) jack** (38)

14 **Battery cover**

15 **OPEN button** (16)

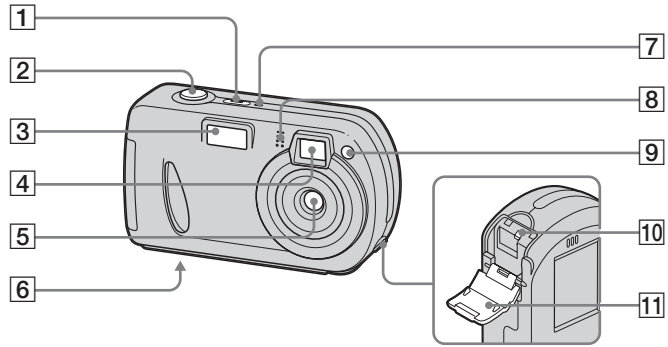
16 **Wrist strap hook**

Attaching the wrist strap



17 **Jack cover**

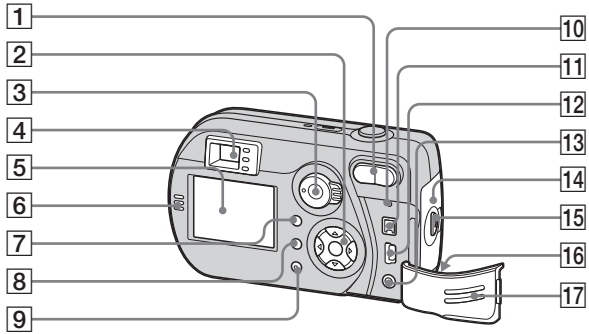
(DSC-P32)



1 **POWER button** (20)
2 **Shutter button** (26)
3 **Flash** (32)
4 **Finder window**
5 **Lens**
6 **Tripod receptacle (bottom surface)**
7 **POWER lamp** (20)
8 **Microphone**
9 **Self-timer lamp** (31)**/ AF illuminator** (33)
10 **Access lamp** (23)
11 **"Memory Stick" cover** (23)

• "3.2MEGA PIXELS" shown on the surface of the camera is the number of effective pixels of the CCD. However, the maximum number of pixels recorded is 3.1 mega pixels. The indication of the number of effective pixels of the CCD is a recommendation of the JCIA (Japan Camera Industry Association).

• Use a tripod with a screw length of less than 5.5 mm (7/32 inch). You will be unable to firmly secure the camera to tripods having longer screws, and may damage the camera.

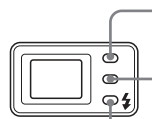


1 **Zoom buttons (during shooting)** (29)**/Index buttons (during playback)** (37)

2 **Control button**
(Menu on) (▲/▼/◄/►/●) (20)**/**
(Menu off) (ϟ/⏲/⊜/[●]) (32/31/28/51)

3 **Mode selector** (21)
[►]: To view or edit images
: To shoot still images
: To shoot movies/Clip Motion images/Multi Burst mode images
SET UP: To set the SET UP items

4 **Finder** (34)



Self-timer/recording lamp (red) (31/27)

AE/AF lock lamp (green) (26)

ϟ (Flash charge) lamp (orange) (32)

5 **LCD screen**

6 **Speaker**

7 **MENU button** (102)

8 **|▭| (LCD status/LCD on/off) button** (34)

9 **▦ / 🗑 (Image Size/Delete) button** (24/40)

10 **RESET button** (91)

11 **DC IN jack** (19)

12 **ψ (USB) jack** (82)

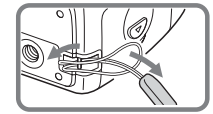
13 **A/V OUT (MONO) jack** (38)

14 **Battery cover**

15 **OPEN button** (16)

16 **Wrist strap hook**

Attaching the wrist strap



17 **Jack cover**

Preparing batteries

Use the following batteries in this camera.

Acceptable batteries

HR 15/51:HR6 (size AA) Nickel-Metal Hydride batteries (2)
- – NH-AA-DA (2) (supplied)
- – NH-AA-2DA twin-pack (not supplied)

R6 (size AA) alkaline batteries (2)

Batteries that cannot be used

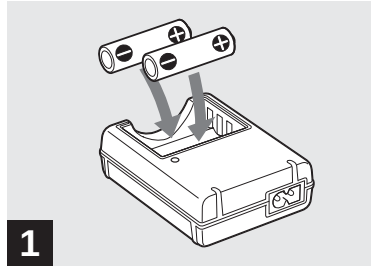
Manganese batteries, lithium batteries, ni-cad batteries

If you use the batteries described above, we cannot guarantee full performance of the camera by property of the batteries, such as brownout of the batteries.

The battery remaining indicator does not display the correct information.

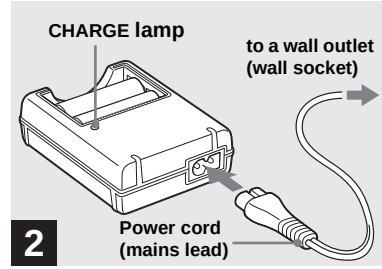
- When alkaline batteries are used, take note of the following information.
  - – There is a big difference in the performance of batteries of different types and of batteries made by different manufacturers. This is especially true in low temperatures, where some batteries are noticeably weaker. You may not be able to shoot in temperatures below +5°C (41°F).
  - – The battery remaining indicator may not display the correct information.

Charging the batteries



➡ **Insert Nickel-Metal Hydride batteries into the battery charger (supplied) with the correct polarity +/–.**

- You cannot charge alkaline batteries using the battery charger.
- Be sure to charge the Nickel-Metal Hydride batteries supplied with your camera before using them.
- Connect the battery charger to an easily accessible wall outlet (wall socket) close by.



➡ **Connect the battery charger to a wall outlet (wall socket) using the power cord (mains lead).**

Charging starts, and the CHARGE lamp lights. When the CHARGE lamp goes out, charging is finished.

For details on the battery charger, see page page 111.

- When charging is finished, disconnect the power cord (mains lead) from the wall outlet (wall socket), and remove the Nickel-Metal Hydride batteries from the battery charger.
- Even if the CHARGE lamp is not lit, the set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet (wall socket). If some trouble occurs while using the battery charger, immediately shut off the power by disconnecting the plug from the wall outlet (wall socket).

Charging time

Nickel-Metal Hydride battery	Charging time
NH-AA-DA × 2 (supplied)	Approx. 6 hours

This represents the time required to charge fully depleted Nickel-Metal Hydride batteries using the supplied battery charger in an environment where the ambient temperature is 25°C (77°F).

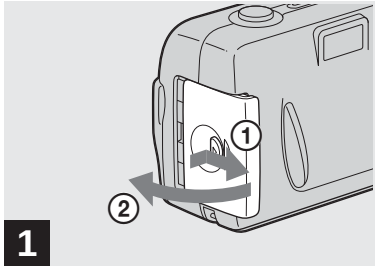
- Charging is complete in approximately six hours. The CHARGE lamp may remain lit longer than six hours, but this is not a malfunction.
- If you use the BC-CSQ2 battery charger supplied with the STAMINA "Super Quick charge" kit (not supplied), the batteries will charge faster.
  Charging time
  When charging two Nickel-Metal Hydride batteries: Approximately 2 hours 30 minutes
  When charging four Nickel-Metal Hydride batteries: Approximately 5 hours

Notes on the Nickel-Metal Hydride batteries

- If the poles of the Nickel-Metal Hydride batteries are dirty, the batteries may not charge properly. Occasionally clean the poles of the batteries and the terminals of the charger by wiping them with a dry cloth.
- When transporting the Nickel-Metal Hydride batteries, be sure to use the battery case (supplied). If the +/- metal terminals are shorted, there is a possibility of danger from excessive heat or fire.
- At the time of purchase, or when the Nickel-Metal Hydride batteries have not been used for a long time, they may not fully charge. This is typical of this type of battery, and is not a malfunction. If this happens, repeatedly using up the battery fully, and then recharging it, should correct the problem.
- Even when Nickel-Metal Hydride batteries are not being used they loose their charge naturally over time. It is recommended that you recharge the batteries just before using them.
- If you recharge Nickel-Metal Hydride batteries before fully using up the existing charge, the so-called memory effect* can occur, and the low battery warning will be triggered sooner than expected. Charging the battery after fully depleting the existing charge should correct the problem.

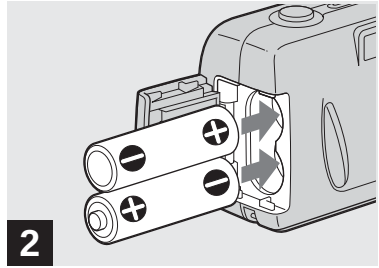
* The "memory effect" – the situation in which a battery temporarily accepts a less than full charge.

- To use up the batteries completely, put the camera in the slide show mode (page 63) and leave it that way until the batteries are used up.
- Do not peel off the external seals or damage the batteries. Never use batteries from which the seals have been partially or completely removed, or batteries that have been split in any way. These may cause leakage, explosion, or heat-up of the battery, and personal scald or injury may be caused. These may cause a malfunction of the battery charger.



➡ **Open the battery cover.**

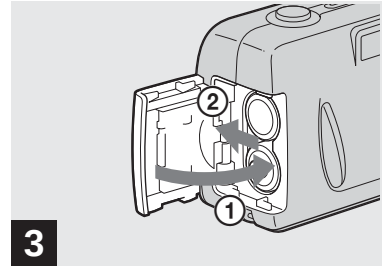
Slide it in the direction of the arrow with the OPEN button pressed, and it opens out.



➡ **Insert the batteries.**

Match the +/– poles of the batteries to the +/– marks inside the battery case.

- Occasionally clean the poles of the batteries and the terminals of the battery cover by wiping them with a dry cloth. If the poles of the batteries or the terminals become covered with a film of dirt or oil from the skin, the operating time of the camera can be greatly reduced.



➡ **Close the battery cover.**

Close the battery cover while holding the batteries in. The cover is closed when it clicks.

To remove the batteries

Stand the camera on end, open the battery cover upward, then remove the batteries.

- Make sure you do not drop the batteries when opening or closing the battery cover.

Battery remaining indicator (When using the Nickel-Metal Hydride batteries)

As the battery power decreases with use, the battery remaining indicator displays the amount of power remaining using the following symbols.

Battery remaining indicator	Battery remaining guidelines (A full charge is 100%)
	Sufficient power remaining
	Battery half full
	Battery low, recording/ playback will stop soon.
	Change the batteries for fully charged ones, or charge these batteries. (The warning indicator flashes.)

- If the LCD screen is off, press |□| to turn it on.
- Based on the conditions under which the camera is being used and the state of the charge, or on the environment, this information may not be correctly indicated.
- When the AC Adaptor (not supplied) is being used, the remaining battery information is not displayed.

The Power Save function

When the Power Save function is set to On, you can shoot for a longer period of time. Turn the mode selector to SET UP, and set [Power Save] in Setup 1 to [On]. The factory setting of the camera is set to [On] (page 107).
We recommend that you set [Power Save] to [On] when using alkaline batteries.

When the Power Save function is On

- In shooting still images, the focus only focuses when the shutter is pushed down halfway.
- While charging the flash, the ϟ lamp flashes and the LCD screen is turned off. After the flash is completely charged, the LCD screen turns on.

Battery life and the number of images that can be recorded/ played back

The tables show approximate guidelines for the length of time the camera can be used when you shoot in Normal mode in an environment where the ambient temperature is 25°C (77°F), and the batteries are fully charged. The guidelines for the number of images that can be recorded or played back allow for changing the supplied "Memory Stick" as necessary. Actual results may differ slightly from these, depending on the conditions of use.

Shooting still images
Under the average conditions[1)]

Image size	NH-AA-DA (2) (supplied)		
	LCD screen	No. of images	Battery life (min.)
DSC-P72			
3.1M	On	Approx. 300	Approx. 150
	Off	Approx. 500	Approx. 250
VGA	On	Approx. 300	Approx. 150
	Off	Approx. 500	Approx. 250
DSC-P32			
3.1M	On	Approx. 320	Approx. 160
	Off	Approx. 540	Approx. 270
VGA	On	Approx. 320	Approx. 160
	Off	Approx. 540	Approx. 270

Image size	R6 (Size AA) alkaline battery (2) (not supplied)		
	LCD screen	No. of images	Battery life (min.)
DSC-P72			
3.1M	On	Approx. 70	Approx. 35
	Off	Approx. 130	Approx. 65
VGA	On	Approx. 70	Approx. 35
	Off	Approx. 130	Approx. 65
DSC-P32			
3.1M	On	Approx. 80	Approx. 40
	Off	Approx. 140	Approx. 70
VGA	On	Approx. 80	Approx. 40
	Off	Approx. 140	Approx. 70

When using Sony alkaline batteries

[1] Shooting under the following conditions:
- The image quality is set to [Fine].
- Shooting one image every 30 seconds.
- Alternatively pressing the zoom W and T buttons fully for each shot (DSC-P72 only).
- Using the flash once in every two shots.
- Turning on and off once in every ten shots.

Playing back[2] still images

Image size	NH-AA-DA (2) (supplied)	
	No. of images	Battery life (min.)
DSC-P72		
3.1M	Approx. 5400	Approx. 270
VGA	Approx. 5400	Approx. 270
DSC-P32		
3.1M	Approx. 6000	Approx. 300
VGA	Approx. 6000	Approx. 300

[2] Showing single images in order, one approximately every three seconds

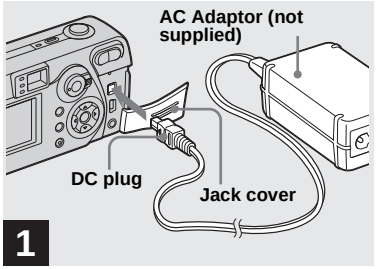
Shooting[3] movies

	NH-AA-DA (2) (supplied)	
	LCD screen On	LCD screen Off
DSC-P72	Approx. 160	Approx. 210
DSC-P32	Approx. 160	Approx. 210

[3] Continuous shooting with a picture size of 160 (Mail)

- The battery life and the number of images recordable decrease under the following conditions:
  - At low temperatures.
  - Using the flash.
  - Turning the camera on and off frequently.
  - Using the zoom heavily (DSC-P72 only)
  - When [LCD Backlight] is set to [Bright].
  - When [Power Save] is set to [Off].
  - After using the batteries repeatedly over a long period of time or after often allowing it to self-discharge after charging (page 111).

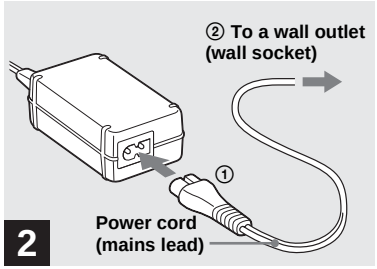
Using an external power source



➡ **Open the jack cover, then connect the AC-LS5 AC Adaptor (not supplied) to the DC IN jack of the camera.**

Connect the plug with the ▲ mark facing toward the LCD screen.

- **Be sure to use the AC-LS5 AC Adaptor. Other AC adaptors cannot be used with this camera.**
- Connect the AC Adaptor to an easily accessible wall outlet (wall socket) close by. If some trouble occurs while using the adaptor, immediately shut off the power by disconnecting the plug from the wall outlet (wall socket).



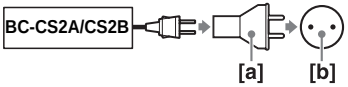
➡ **Connect the power cord (mains lead) to the AC Adaptor and to a wall outlet (wall socket).**

- When you have finished using the AC Adaptor, disconnect it from the DC IN jack of the camera.
- The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet (wall socket), even if the unit itself has been turned off.

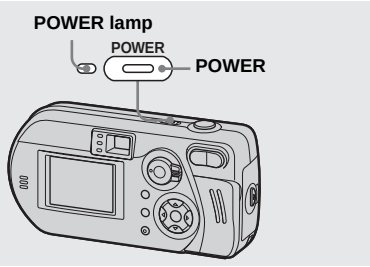
Using your camera abroad

Power sources

You can use your camera in any country or area with the supplied battery charger or AC Adaptor (not supplied) within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet (wall socket) **[b]**.



- Do not use an electrical transformer (travel converter), as this may cause a malfunction.



➡ **Press POWER to turn on the camera.**

The POWER lamp lights in green and the power is on. When you turn on the camera for the first time, the Clock Set screen appears (page 21).

To turn off the power

Press POWER again, the POWER lamp goes out, and the camera turns off.

- **Do not remove the batteries or AC Adaptor with the lens portion pulled out. This may cause a malfunction.**
- When you turn the power on with the mode selector set to 📷 or 🎞, the lens begins to move (DSC-P72 only). Please be careful not to touch the lens.

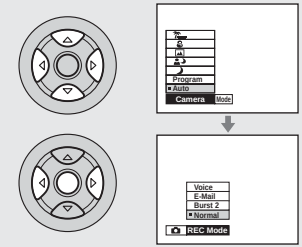
The Auto Power Off function

If no tasks are performed for a while* when shooting, viewing images, or setting up the camera while using the batteries, power is automatically shut off to preserve battery power.

However, in the following circumstances, even if the batteries are being used to power the camera, the Auto Power Off function will not work.

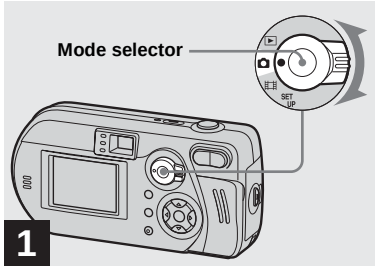
- Movies are being played back
- A slide show is being shown
- A cable is connected to the Ψ (USB) jack or the A/V OUT (MONO) jack

* When [Power Save] is set to [On]: approximately 90 seconds
When [Power Save] is set to [Off]: approximately three minutes



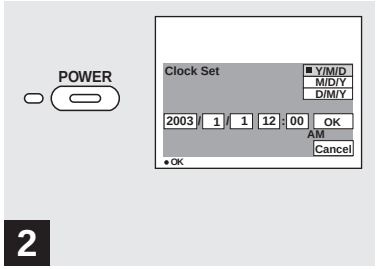
To change the current settings of the camera, bring up the menu or the SET UP screen (page 45), and use the control button to make the changes.

For each item, press ▲/▼/◀/▶ to select the desired value, then press ● or ◀/▶ to make the setting.



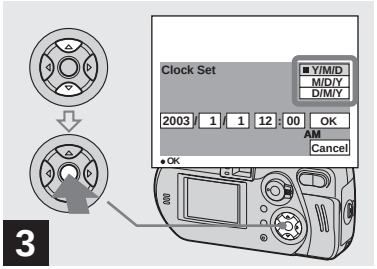
➡ **Set the mode selector to 📷.**

- To set the time and the date again, set the mode selector to SET UP, select [Clock Set] in 🧰 (Setup 1) (pages 45, 107), then proceed from Step **3**.
- You can carry out this operation even when the mode selector is set to 🎞 or ▶.



➡ **Press POWER to turn on the camera.**

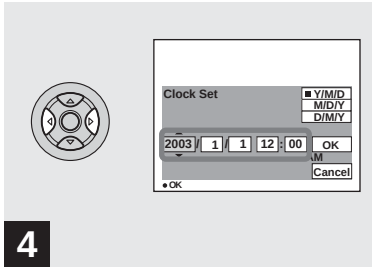
The POWER lamp lights in green and the Clock Set screen appears on the LCD screen.



➡ **Select the desired date format with ▲/▼ on the control button, then press ●.**

You can select from [Y/M/D] (year/month/day), [M/D/Y], and [D/M/Y].

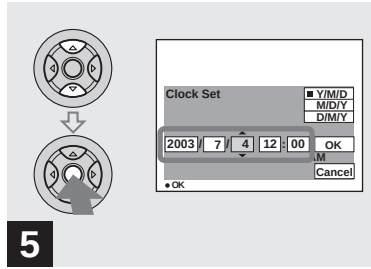
- If the rechargeable button battery, which provides the power for saving the time data, ever loses its charge (page 109), the Clock Set screen automatically reappears. If this happens, start from Step **3** to set up the date and time again.



4

➡ **Select the year, month, day, hour, or minute item you want to set with ◄/► on the control button.**

▲ is shown above and ▼ is shown below the selected item.

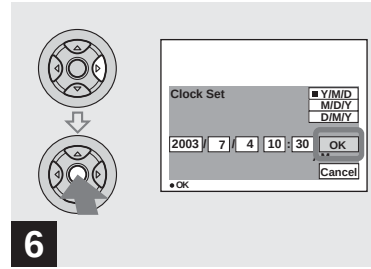


5

➡ **Set the desired numerical value with ▲/▼ on the control button, then press ●.**

After setting the current numerical value, set the next item. Repeat the above process until all of the items have been set.

- If you select [D/M/Y] in Step 3, set the time on a 24- hour cycle.

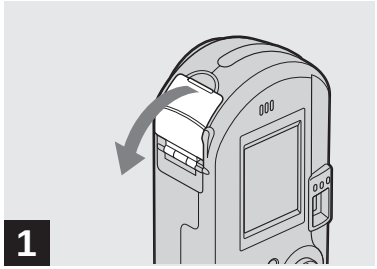


6

➡ **Select [OK] with ► on the control button, then press ●.**

The date and time are set and the clock will start to keep time.

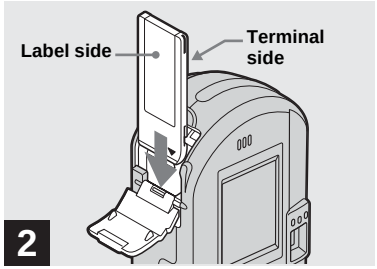
- To cancel the setting process, select [Cancel], then press ●.



➡ **Open the “Memory Stick” cover.**

Slide the cover in the direction of the arrow.

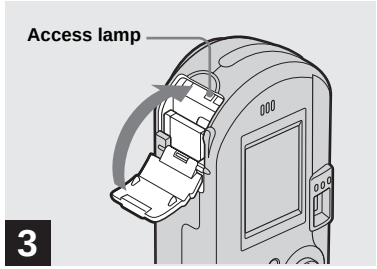
- For more information about the “Memory Stick,” see page 109.



➡ **Insert the “Memory Stick.”**

Insert the “Memory Stick” all the way in until it clicks as shown in the illustration.

- Whenever you insert a “Memory Stick,” push it as far as it can go. If you do not insert it correctly, a proper recording or playback may not be carried out.

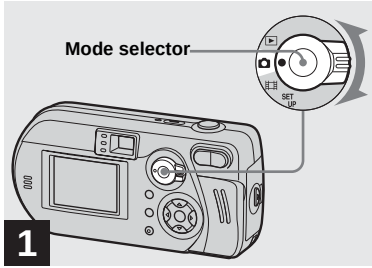


➡ **Close the “Memory Stick” cover.**

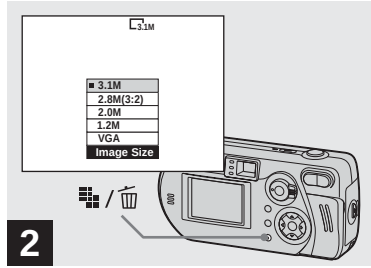
To remove the “Memory Stick”

Open the “Memory Stick” cover, then push the “Memory Stick” to pop it out.

- **Whenever the access lamp is lit, the camera is recording or reading out an image. Never remove the “Memory Stick” or turn off the power at this time. The data may be corrupted.**



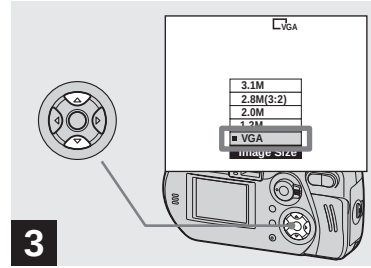
➡ **Set the mode selector to .**



➡ **Turn on the camera, then press / (Image Size).**

The Image Size setup item appears.

- For more information about the image size, see page 25.



➡ **Select the desired image size with ▲/▼ on the control button.**

The image size is set.

After the setting is completed, press / (Image Size). The Image Size setup item disappears from the screen.

- The image size value selected here is preserved even when the camera is turned off.

You can choose image size (number of pixels) and image quality (compression ratio) based on the kind of images you want to shoot. The larger you make the image size and the higher you make the image quality, the better your image, but also the larger the amount of data needed to preserve your image. This means you can save fewer images in your “Memory Stick.”
Choose an image size and quality level appropriately for the kind of images you want to shoot.
You can resize the images later (Resize function, see page 69).

You can choose an image size from among the five options in the following tables. The image sizes shown below show minimum settings as examples. When you want to improve image quality, select a larger image size.

Image size		Examples
3.1M	2048×1536	Printing A4 size images
2.8M (3:2)	2048(3:2)	3:2 prints[1)]
2.0M	1632×1224	Printing A5 size images
1.2M	1280×960	Printing postcard size images
VGA	640×480	Creating your home page

[1)] This option records images in a horizontal to vertical proportion of 3:2 to match the size of the print paper used.

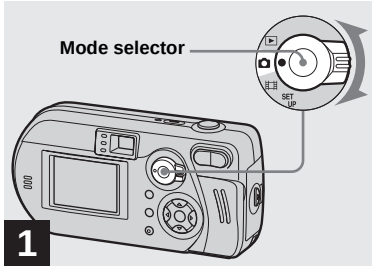
The number of images that can be saved in a “Memory Stick”[2)]

The number of images that can be saved in Fine (Standard)[3)] mode are shown below. (Units: number of images)

Capacity / Image size	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
3.1M	10 (18)	20 (37)	41 (74)	82 (149)	148 (264)	302 (537)	617 (1097)
2.8M (3:2)	10 (18)	20 (37)	41 (74)	82 (149)	148 (264)	302 (537)	617 (1097)
2.0M	16 (30)	33 (61)	66 (123)	133 (246)	238 (446)	484 (907)	988 (1852)
1.2M	24 (46)	50 (93)	101 (187)	202 (376)	357 (649)	726 (1320)	1482 (2694)
VGA	97 (243)	196 (491)	394 (985)	790 (1975)	1428 (3571)	2904 (7261)	5928 (14821)

[2)] When [REC Mode] is set to [Normal]
For the number of images that can be saved in other modes, see page 101.
[3)] For more information about the image quality mode, see page 46.

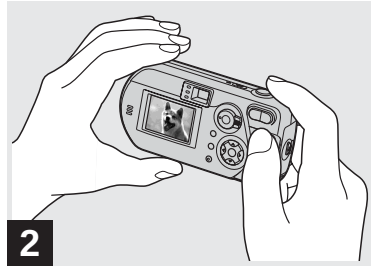
- “3.2MEGA PIXELS” shown on the surface of the camera is the number of effective pixels of the CCD. However, the maximum number of pixels recorded is 3.1 mega pixels.
- When the 1600×1200 size images recorded using other Sony devices are played back, “2.0M” is indicated on the LCD screen. However, the actual size is 1.9M in these cases.
- When the images are viewed on the LCD screen of the camera, they all look the same size.
- Number of shooting images can differ from these values according to shooting conditions.
- When the remaining number of images recordable is more than 9999, “>9999” is indicated.



➡ **Set the mode selector to 📷, and turn on the camera.**

The recording folder name is indicated on the LCD screen for about five seconds.

- The lens cover opens when the power is turned on.
- Do not touch the lens portion while it is operating, such as when you press POWER to turn on the power or when the zoom function is working (DSC-P72 only) (page 29).
- You can create a new folder in the “Memory Stick” and select the folder for storing images (page 46).



➡ **Hold the camera steadily with both hands and position a subject in the center of the focus frame.**

Do not cover the lens, flash, or microphone with your fingers.

- The minimum focal distance to a subject is 50 cm (19 $^{3}/_{4}$ inches) for the DSC-P72 or 10 cm (4 inches) for the DSC-P32. To shoot subjects at distances closer than this, use the macro mode (DSC-P72 only) (page 30).

➡ **Press and hold the shutter button halfway down.**

The camera beeps. When the AE/AF lock indicator stops flashing and remains on, the camera is ready for shooting. (The screen may be frozen for a split second depending on the subject.)

- If you release your finger from the shutter button, shooting will be canceled.
- When the camera does not beep, the AF adjustment is not complete. You can continue to shoot, but the focus is not set properly.
- The frame indicated on the LCD screen shows the focus adjustment range. (AF range finder, see page 48.)

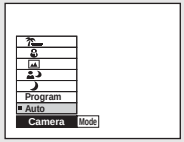
➡ **Press the shutter button fully down.**

The shutter clicks, the shooting is completed, and the still image is saved in the “Memory Stick.” When the recording lamp (pages 11, 13) goes out, you can shoot the next image.

- When you are shooting with the batteries, if no tasks are performed for a while with the camera turned on, power is automatically shut off to preserve battery power (page 20).

The 📷 position on the mode selector

When the mode selector is set to 📷, the functions that can be selected change according to the 📷 (Camera) setting in the menu settings as follows:



Auto mode shooting [Auto]

You can shoot your subject easily since this mode automatically adjusts the focus, exposure, and white balance. In this mode, [Mode] is set to [Fine], the AF range finder is set to [Multi AF], and the metering mode is set to multi-pattern metering (pages 48, 51). The menu items you can display are limited to 📷 (Camera) and [Mode] (REC Mode).

Program mode shooting [Program]

You can set the shooting functions in the menu settings according to your shooting condition.

Twilight mode [🌙]

See page 58.

Twilight portratit mode [🌙]

See page 58.

Landscape mode [🏔]

See page 58.

Snow mode [☃]

See page 58.

Beach mode [🏖]

See page 58.

To change the camera mode

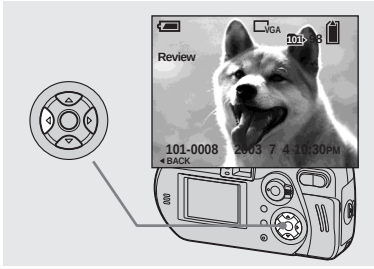
1. Set the mode selector to 📷.
2. Press MENU.
3. Select 📷 (Camera) with ◄ on the control button.
4. Select the desired camera mode with ▲/▼ on the control button.

About Auto Focus

When you try to shoot a subject that is hard to focus on, the AE/AF lock indicator will change to flashing slowly.
The Auto Focus function may be difficult to use with in the following subjects. In such cases, release the shutter button, then try to recompose the shot and focus again.

- The subject is distant from the camera and dark
- The contrast between the subject and its background is poor
- The subject is seen through glass, such as a window
- A fast-moving subject
- The subject has a reflection, such as that from a mirror, or there is a luminous body and a lustrous subject
- A flashing subject.
- A backlit subject

There are two methods for Auto Focus function: Multipoint AF and Center AF (page 48). When [📷] (Camera) is set to [Auto] in the menu settings, the Multipoint AF is automatically selected.

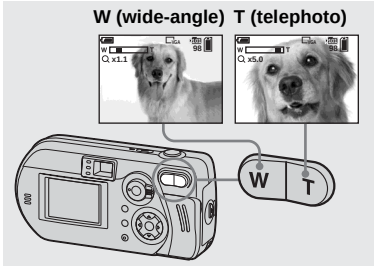


➡ **Press ◀ (⟲) on the control button.**

To return to shooting mode, press the shutter button lightly or press ◀ (⟲) on the control button again.

To delete the image displayed on the LCD screen

1. Press ▦ / 🗑 (Delete).
2. Select [Delete] with ▲ on the control button, then press ●.
   The image is deleted.



➡ **Press the zoom buttons to choose the desired zoom position, and shoot your image.**

The minimum distance needed to focus on a subject

Approximately 50 cm (19 $^{3}/_{4}$ inches) from the end of the lens (DSC-P72)
Approximately 10 cm (4 inches) from the end of the lens (DSC-P32)

- The lens moves when the zoom feature is being used (DSC-P72 only). Be very careful not to touch the lens.
- You cannot change the zoom scaling while shooting movies (page 72).

Smart zoom

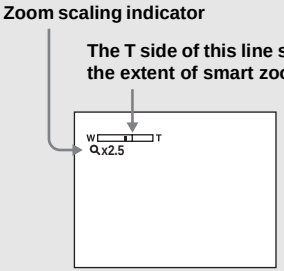
You can zoom in on the image using a digital zoom process with no deterioration in the image quality.
The maximum zoom scale depends on the image size.

	DSC-P72	DSC-P32
2.0M	3.8×	1.3×
1.2M	4.8×	1.6×
VGA	9.6×	3.2×

When the image size is [3.1M] or [2.8M (3:2)], the smart zoom does not work.

DSC-P72

When the zoom exceeds 3×, enlargement is carried out using the smart zoom. When the smart zoom is not needed, set [Smart Zoom] to [Off] in the SET UP settings (page 106). Pressing the zoom buttons displays the zoom scaling indicator on the LCD screen.



DSC-P32

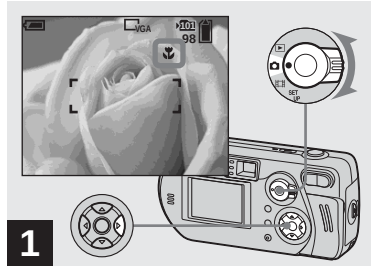
The DSC-P32 does not have an optical zoom. It has only the smart zoom.

- You cannot confirm the image using the finder when using the smart zoom function.
- When using the smart zoom, the image on the LCD screen may look rough. However, this phenomenon has no effect on the recorded image.
- AF range finder is not shown when using the smart zoom. When (Focus) is set to [Multi AF] or [Center AF], [ ] or [ ] flashes and the centrally-located subject has priority to focus on.

For close-ups of small subjects like flowers or insects, shoot using the macro feature. You can use this feature for close-ups of subjects up to the distances specified below.

When the zoom is set all the way to the W side: 10 cm (4 inches) from the end of the lens

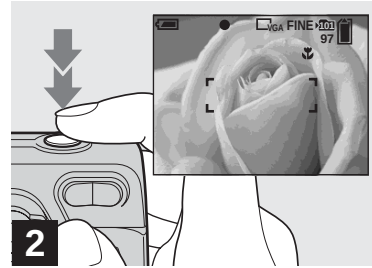
When the zoom is set all the way to the T side: 50 cm (19 $^{3}/_{4}$ inches) from the end of the lens



➡ Set the mode selector to 📷, and press ▶ (🌷) on the control button.

The 🌷 (Macro) indicator appears on the LCD screen.

- If the menu is currently displayed, press MENU first to make the menu disappear.
- You can carry out this operation even when the mode selector is set to 🎞.

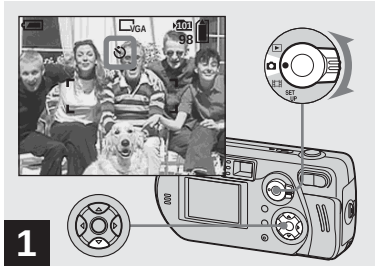


➡ Center the subject in the frame, and press the shutter button fully down.

To return to normal shooting

Press ▶ (🌷) on the control button again. The 🌷 indicator disappears from the LCD screen.

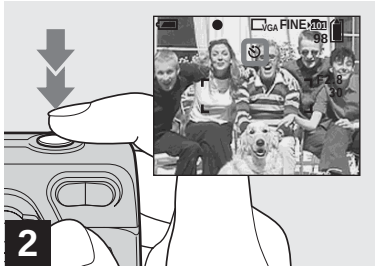
- Use the LCD screen to shoot when using the macro feature. If you use the finder, the limits of what you see and what you actually shoot may be different.



➡ **Set the mode selector to 📷, and press ▼ (⏲) on the control button.**

The ⏲ (Self-timer) indicator appears on the LCD screen.

- If the menu is currently displayed, press MENU first to make the menu disappear.
- You can carry out this operation even when the mode selector is set to 🎞.



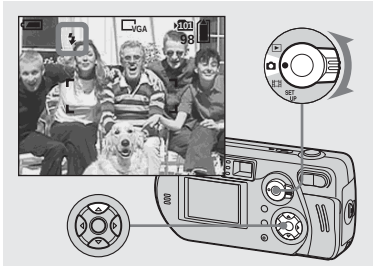
➡ **Center the subject in the frame, and press the shutter button fully down.**

The Self-timer lamp (pages 10, 12) will flash in orange, and you will hear a beeping sound. The image will be shot after approximately 10 seconds.

To cancel the self-timer during the operation

Press ▼ (⏲) on the control button again. The ⏲ indicator dissapears from the LCD screen.

- If you stand in front of the camera and press the shutter button, the focus and the exposure may not be correctly set.



➡ **Set the mode selector to 📷, and press ▲ (⚡) on the control button repeatedly to select a flash mode.**

The flash mode has the following features.

No indicator (Auto): The camera decides to use the flash based on lighting conditions. The flash will be used when there is not enough light or when shooting a subject against a light source.
⚡ (Forced flash): The flash will be used regardless of the amount of ambient light.
⚡SL (Slow synchro): The flash will be used regardless of the amount of ambient light. In this mode, the shutter speed is slower under dark conditions, so you can clearly shoot a background that is out of the flash-lit area.

⊘ (No flash): The flash will not be used.

- If the menu is currently displayed, press MENU first to make the menu disappear.
- You can carry out this operation even when the mode selector is set to 🎞 (Clip motion).
- The recommended distance using the flash is about 0.5 m to 3.8 m (19 $^{3}/_{4}$ inches to 12 feet 5 $^{19}/_{32}$ inches) (W)/0.5 m to 2.5 m (19 $^{3}/_{4}$ inches to 8 feet 2 $^{7}/_{16}$ inches) (T) (DSC-P72) or 0.5 m to 3.8 m (19 $^{3}/_{4}$ inches to 12 feet 5 $^{19}/_{32}$ inches) (DSC-P32) when [ISO] is set to [Auto].
- You can change the brightness of the flash using [Flash Level] in the menu settings (page 103).
- If you look at the LCD screen in a dark place in Auto or ⚡ (Forced flash) mode, you may notice some “noise” in the image, but this will have no effect on the image you shoot.
- Because the shutter speed is slower under dark conditions when ⚡SL (Slow synchro) or ⊘ (No flash) is selected, it is recommended that you use a tripod.
- While the flash is being charged, the ⚡ lamp flashes. After charging is completed, the lamp goes out.
- The flash mode selected here is preserved even when the camera is turned off.

When shooting against a light source

In Auto mode, shooting against a light source automatically flashes even when there is enough light around the subject. (Daylight synchro)

Before flashed

When flashed

- The best perfofmance may not be given depending on shooting conditions.
- When you do not want to use the flash, set the flash mode to ⊘ (No flash).

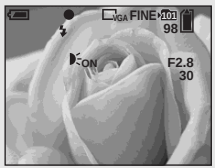
To reduce “red-eye” when shooting live subjects

The flash pre-strobes before shooting to reduce the red-eye phenomenon. Set [Red Eye Reduction] to [On] in the SET UP settings (page 106). appears on the LCD screen.

- The amount of red-eye reduction possible varies according to the individual. In addition, the distance to the subject, and whether or not the subject has seen pre-strobe light begin to strobe may also reduce the effectiveness of the red-eye reduction process.

Shooting with the AF illuminator

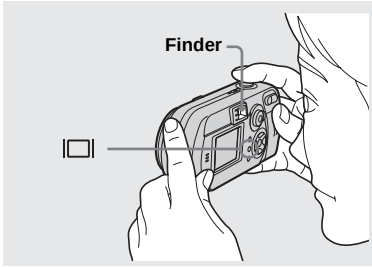
This is additional lighting provided to assist in focusing when shooting in dark places. Set [AF Illuminator] to [Auto] in the SET UP settings (page 106). If you try to shoot under insufficient lighting conditions, ON appears on the LCD screen; the AF illuminator will emit a red light automatically during the time between when the shutter button is pressed halfway down and the focus locks.



- Even when the AF illuminator flashes, but sufficient light does not reach the subject*, or the subject has weak contrast, the camera may not focus properly.

* The recommend distance for this feature is as follows:
DSC-P72: Up to approximately 3.8 m (12 feet 5 $^{19}/_{32}$ inches) (W)/Up to approximately 2.5 m (8 feet 2 $^{7}/_{16}$ inches) (T)
DSC-P32: Up to approximately 2.5 m (8 feet 2 $^{7}/_{16}$ inches)

- If AF illuminator light misses the center of the image somewhat, the camera will focus properly as long as it reaches the subject.
- When the focus preset distance is set (page 49), the AF illuminator does not function.
- When (Focus) is set to [Multi AF] or [Center AF], the AF range finder is not displayed. [ ] or [ ] flashes and the centrally-located subject has priority to focus on.
- When [ ] (Camera) is set to one of the following items in the menu settings, the AF illuminator will not function (page 58).
  – When shooting in Twilight mode
  – When shooting in Landscape mode
- The AF illuminator is a bright light. There are no safety hazards, but when shooting at short distances, do not aim it directly at the subject’s eyes.



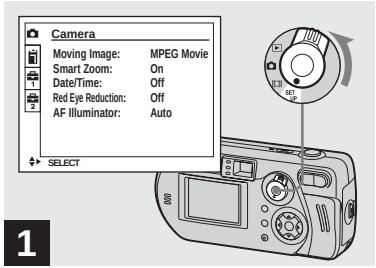
The finder is convenient when you want to save battery power, or when it is difficult to confirm the image using the LCD screen. Each time you press |□|, the display changes in the following order.

All of the indicators are turned off

The LCD screen is turned off.

All of the available indicators are turned on.

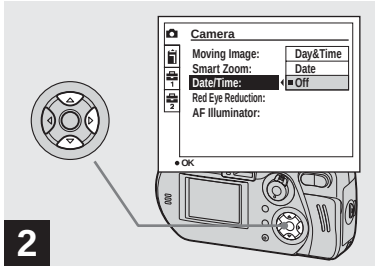
- The image through the finder does not indicate the actual recordable range. To confirm the recordable range, use the LCD screen.
- For details on the items displayed, see page 113.
- Just as with the AE/AF lock indicator on the LCD screen, when the AE/AF lock lamp of the finder section stops flashing and remains on, you can start shooting (page 26).
- When the LCD screen is turned off, the smart zoom does not function (page 29).
- If you press ⚡ (Flash mode)/⏲ (Self-timer)/🌷 (Macro) (DSC-P72) or ◉ (Spot meter) (DSC-P32) with the LCD screen turned off, the image will be displayed on the screen for approximately two seconds so you can check or change the setting.
- This setting is maintained even when the power is turned off.



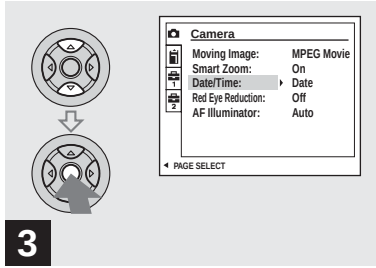
➡ **Set the mode selector to SET UP.**

The SET UP screen appears.

- When images are shot with the date and time inserted, the date and time cannot be removed later.
- When shooting images with the date and time inserted, the actual date and time are not displayed on the LCD screen, and DATE is displayed on the left side on the LCD screen instead. The actual date and time are indicated in red on the lower-right corner when the image is played back.



➡ **Select (Camera) with ▲ on the control button, then press ►.**
Select [Date/Time] with ▲/▼, then press ►.



➡ **Select the date and time setting with ▲/▼ on the control button, then press ●.**

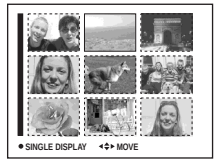
Day&Time: Inserts the date and the time of shooting into the image
Date: Inserts the year, the month and the date of shooting into the image
Off: Does not insert date/time data into the image
After the setting has been completed, set the mode selector to to shoot your image.

- When you chose [Date], the date will be inserted in the order set in "Setting the date and time" (page 21).
- This setting is maintained even when the power is turned off.

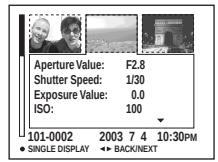
Viewing images on the LCD screen of your camera

Single (single-image) screen

Index (nine-image) screen



Index (triple-image) screen



You can view images shot with the camera almost immediately on the screen. You can select the following three methods for viewing images.

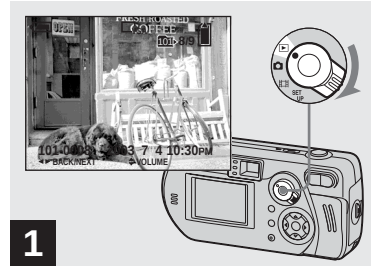
Single (single-image) screen
You can view one image at a time, occupying the entire screen.

Index (nine-image) screen
Nine images are displayed simultaneously in separate panels on the screen.

Index (triple-image) screen
Three images are displayed simultaneously in separate panels on the screen. Various image information items are also displayed.

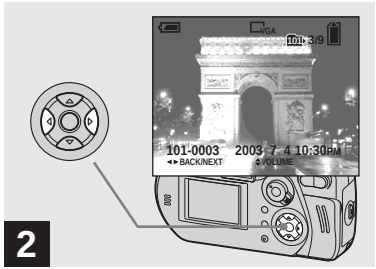
- For details on the movies, see page 73.
- For a detailed description of the screen indicators, see page 115.

Viewing on the single-image screen



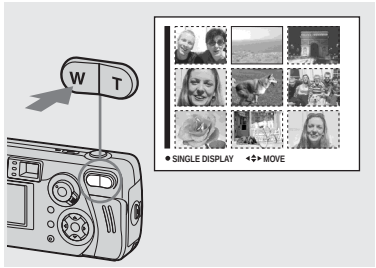
➡ **Set the mode selector to ▶, and turn on the camera.**

The newest image in the selected recording folder (page 47) is displayed.



➡ Select the desired still image with ◄/► on the control button.

◄ : Displays the previous image.
► : Displays the next image.

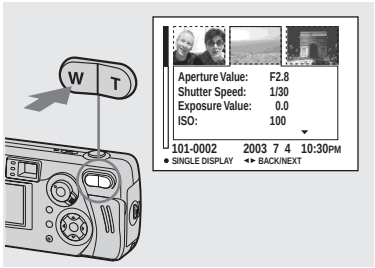


➡ Press the zoom W (index) button once.

The display switches to the **Index (nine-image) screen**.

To display the next (previous) Index screen

Press ▲/▼/◄/► on the control button to move the yellow frame up/down/left/right.



➡ Press the zoom W (index) button once more.

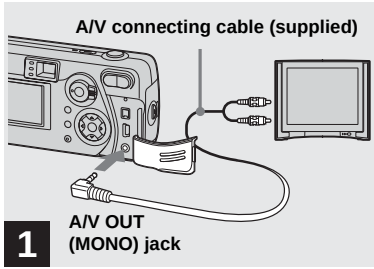
The display switches to the **Index (triple-image) screen**.
Pressing ▲/▼ on the control button shows the remaining image information.

To display the next (previous) Index screen

Press ◄/► on the control button.

To return to the single-image screen

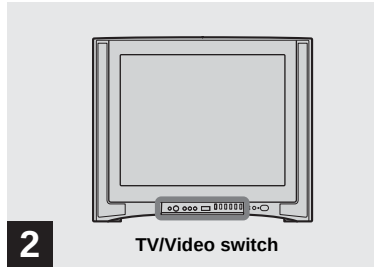
Press the zoom T button repeatedly, or press ● on the control button.



➡ **Connect the supplied A/V connecting cable to the A/V OUT (MONO) jack of the camera and the audio/video input jacks of the TV.**

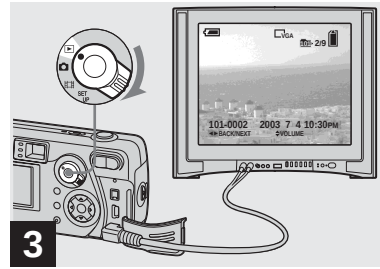
If your TV has stereo type input jacks, connect the audio plug (black) of the A/V connecting cable to the Lch audio input jack.

- Turn off both the camera and the TV before connecting the camera and the TV with the A/V connecting cable.



➡ **Turn on the TV, and set the TV/Video switch to "Video."**

- The name and location of this switch may differ depending on your TV. For details, refer to the operating instructions supplied with the TV.



➡ **Set the mode selector to ▶, and turn on the camera.**

Press ◀/▶ on the control button to select the desired image.

- When using the camera abroad, it may be necessary to switch the video output signal to match that of your TV system (page 107).

Watching images on a TV screen

If you want to view images on a TV, you need a TV having a video input jack and the A/V connecting cable (supplied).
The color system of the TV must match as that of your digital still camera. Check the following list:

NTSC system

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system

Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.

PAL-M system

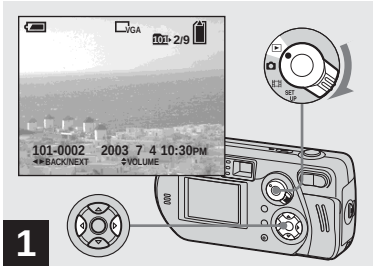
Brazil

PAL-N system

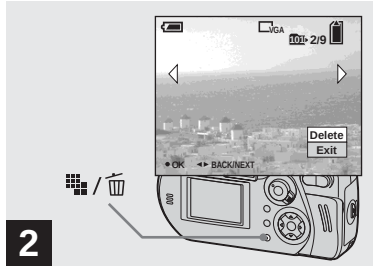
Argentina, Paraguay, Uruguay

SECAM system

Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.



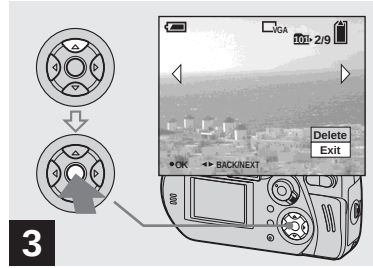
➡ **Set the mode selector to ▶, and turn on the camera. Select the image you want to delete with ◀/▶ on the control button.**



➡ **Press / (Delete).**

The image has not yet been deleted at this point.

- You cannot delete protected images (page 67).



➡ **Select [Delete] with ▲ on the control button, then press ●.**

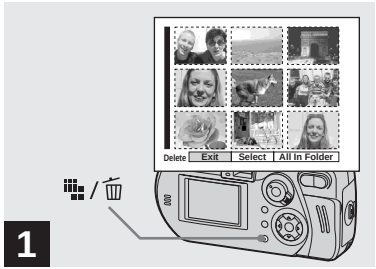
"Memory Stick access" appears on the screen. When this message disappears, the image has been deleted.

To delete other images continuously

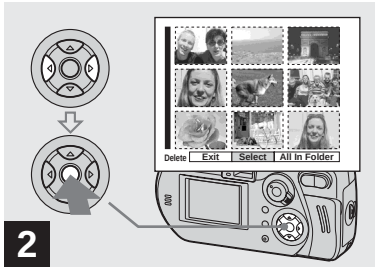
Select the image you want to delete with ◀/▶ on the control button. Next, select [Delete] with ▲ on the control button, then press ●.

To cancel the deletion

Select [Exit] with ▼ on the control button, then press ●.



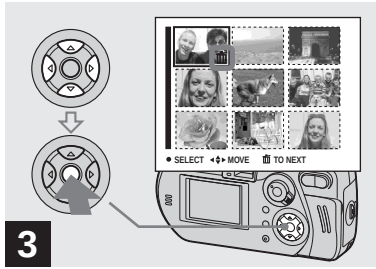
➡ **While an Index (nine-image) screen (page 37) is displayed, press / (Delete).**



➡ **Select [Select] with ◄/► on the control button, then press ●.**

To delete all the images in the folder

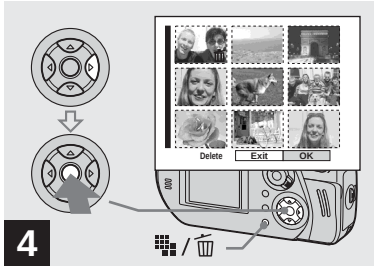
Select [All In Folder] with ► on the control button, then press ●. Next, select [OK], then press ●. All of the unprotected images in the folder are deleted. To cancel the deletion, select [Cancel], then press ●.



➡ **Select the image you want to delete with ▲/▼/◄/► on the control button, then press ●.**

The (Delete) mark is indicated on the selected image. The image has not yet been deleted at this point. Put the mark on all of the images you want to delete.

- To cancel your selection, select images you want to cancel and press ● again. The mark disappears.

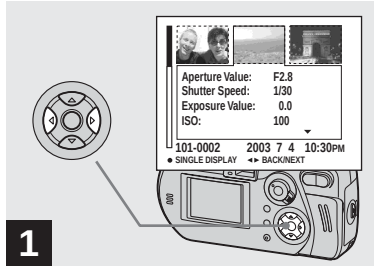


➡ **Press / (Delete). Select [OK] with ▶ on the control button, then press ●.**

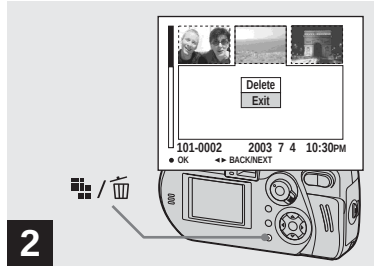
"Memory Stick access" appears on the screen. When this message disappears, all of the images with marks have been deleted.

To cancel the deletion

Select [Exit] with ◀ on the control button, then press ●.

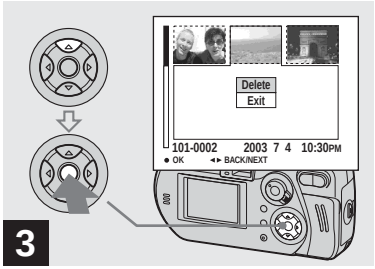


➡ **While an Index (triple-image) screen (page 37) is displayed, move the image you want to delete to the center with ◀/▶ on the control button.**



➡ **Press / (Delete).**

The image has not yet been deleted at this point.

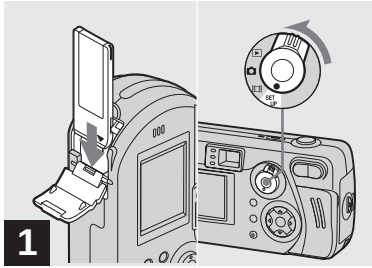


➡ **Select [Delete] with ▲ on the control button, then press ●.**

"Memory Stick access" appears on the screen. When this message disappears, the image has been deleted.

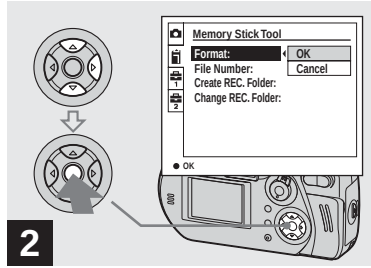
To cancel the deletion

Select [Exit] with ▼ on the control button, then press ●.



➡ **Insert the “Memory Stick” you want to format into the camera. Set the mode selector to SET UP, and turn on the camera.**

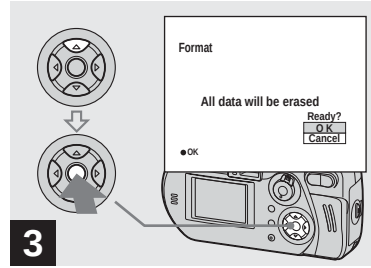
- The term “formatting” means preparing a “Memory Stick” to record images; this process is also called “initialization.” The supplied “Memory Stick” and those available commercially, are already formatted, and can be used immediately.
- **When you format a “Memory Stick,” be aware that all of the data in the “Memory Stick” will be permanently erased. Protected images are also erased.**



➡ **Select (Memory Stick Tool) with ▲/▼ on the control button. Select [Format] with ►, then, press ►.**
Select [OK] with ▲, then press ●.

To cancel the formatting

Select [Cancel] with ▼ on the control button, then press ●.

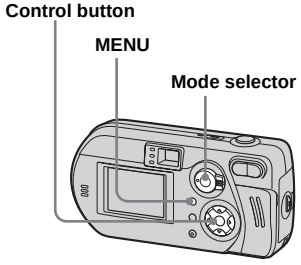


➡ **Select [OK] with ▲ on the control button, then press ●.**

The “Formatting” message appears on the screen. When this message disappears, the format is complete.

How to setup and operate your camera

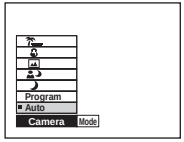
This section describes the most frequently used menus and the SET UP screen.



Changing menu settings

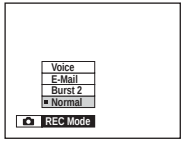
1 Press MENU.

The menu appears.



2 Select the setting item you want to change with ◄/► on the control button.

The letters and symbols of the item you select turn yellow.



3 Select the desired setting with ▲/▼ on the control button.

The frame of the selected setting turns yellow, and the setting is entered.

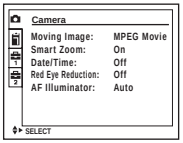
To turn off the menu display

Press MENU.

Changing items in the SET UP screen

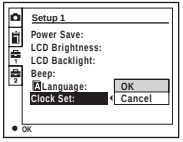
1 Set the mode selector to SET UP.

The SET UP screen appears.



2 Select the setting item you want to change with ▲/▼/◄/► on the control button.

The frame of the item you select turns yellow.



3 Press ● on the control button to enter the setting.

To turn off the SET UP screen display

Set the mode selector to any position other than SET UP.

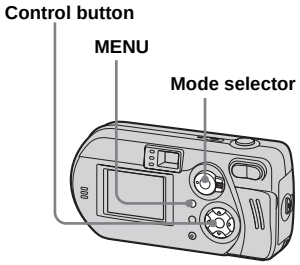
Deciding the still image quality

Mode selector: 📷

You can select the still image quality from [Fine] or [Standard].

Before operation

Set 📷 (Camera) to any mode other than [Auto] in the menu settings (page 27).

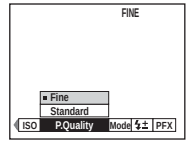


1 Set the mode selector to 📷.

2 Press MENU.

The menu appears.

3 Select (P. Quality) with ◄/►, then select the desired image quality with ▲/▼.

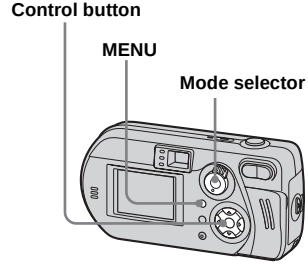


- You can carry out this operation even when the mode selector is set to (Multi Burst).
- The image quality value selected here is preserved even when the camera is turned off.

Creating or selecting a folder

Mode selector: SET UP

Your camera can create multiple folders within a “Memory Stick.” You can select the folder used to store images. When not creating a new folder, “101MSDCF” folder is selected as the recording folder.
You can create folders up to “999MSDCF.”



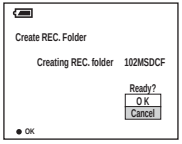
- Up to 4000 images can be stored in one folder. When the folder capacity is exceeded, a new folder is automatically created.

Creating a new folder

1 Set the mode selector to SET UP.

2 Select (Memory Stick Tool) with ▲/▼, [Create REC. Folder] with ►/▲/▼, and [OK] with ►/▲, then press ●.

The following screen appears.



3 Select [OK] with ▲, then press ●.

A new folder is created with a number one higher than the largest number in the “Memory Stick,” and the folder becomes the recording folder.

To cancel folder creation

Select [Cancel] in step 2 or 3.

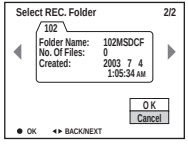
- Once you create a new folder, you cannot delete the new folder with the camera.
- Recorded images are recorded in the newly created folder until a different folder is created or selected.

Selecting the recording folder

1 Set the mode selector to SET UP.

2 Select (Memory Stick Tool) with ▲/▼, [Change REC. Folder] with ►/▲/▼, and [OK] with ►/▲, then press ●.

The recording folder selection screen appears.



3 Select the desired folder with ◄/►, and [OK] with ▲, then press ●.

To cancel changing the recording folder

Select [Cancel] in step 2 or 3.

- You cannot select the “100MSDCF” folder as a recording folder.
- The image is stored in the newly selected folder. You cannot move images to other folders using the camera.

Choosing a focus method

Mode selector: /

Multipoint AF

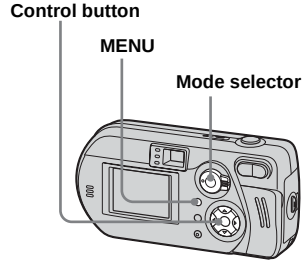
The camera calculates the distance in three areas to the left, and right and in the center of the image, letting you shoot using the auto fucus function without worrying about the image composition. This is useful when it is difficult to focus on the subject because it is not in the center of the frame. The AF range finder that was used changes to green after the focus is achieved.

Center AF

The AF range finder is only the center of the frame. You can shoot in desired image composition using the AF lock method.

Before operation

When shooting still images, set (Camera) to any mode other than [Auto] in the menu settings (page 27).



1 Set the mode selector to or .

2 Press MENU.

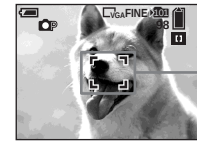
The menu appears.

3 Select (Focus) with ◄/►, then select [Multi AF] or [Center AF] with ▲/▼.

The focus is adjusted automatically. The color of the AF range finder frame changes from white to green.

Multipoint AF

Center AF

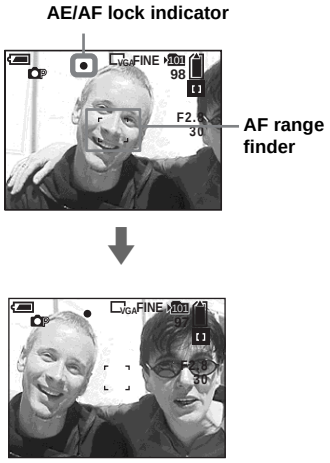


- When you are shooting movies (MPEG movie) and you choose Multipoint AF, the distance to the center of the screen is estimated as an average, so the AF works even with a certain amount of vibration. The Center AF automatically focuses only on the center of the image, so it is convenient when you want to focus only on what you aim at.
- When you use the smart zoom or AF illuminator, priority AF movement is given to subjects in or near the center of the frame. In this case, [ ] or [ ] flashes and the AF range finder is not displayed.

Shooting techniques

Even if it is difficult to focus in AF shooting because the subject is not in the center of the frame, you can focus in this situation using Center AF. For example, when you are shooting two subjects, and there is a gap between them, the camera may focus on the background visible in the gap. In a case like this, use AF lock to ensure the subjects are in correct focus.

Compose the shot so that the subject is centered in the AF range finder, and press the shutter button halfway down.
When the AE/AF lock indicator stops flashing and remains on, return to the fully composed shot, and press the shutter button fully down.



- When you are using AF lock, you can capture an image with the correct focus even if the subject is at the edge of the frame.
- You can carry out the AF lock adjustment process before you press the shutter button fully down.

Setting the distance to the subject

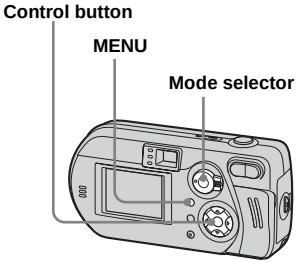
– Focus preset

Mode selector: /

When shooting an image using a previously set distance to the subject, or when shooting a subject through a net or through window glass, it is difficult to get the proper focus in auto focus mode. In these cases, use of the Focus preset is convenient.

Before operation

When shooting still images, set (Camera) to any mode other than [Auto] in the menu settings (page 27).



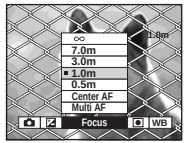
1 Set the mode selector to 📷 or 🎞.

2 Press MENU.

The menu appears.

3 Select Ⓕ (Focus) with ◄/►, then select the distance to the subject with ▲/▼.

You can select from the following distance settings.
0.5m, 1.0m, 3.0m, 7.0m, ∞ (unlimited distance)



To return to auto focus mode

In step **3**, select Ⓕ (Focus), then select [Multi AF] or [Center AF].

- ⦿ (Metering Mode) is not displayed on the menu of the DSC-P32.
- Focal point information may not show the exact distance. Use it as a guide.
- If you point the lens up or down, the error increases (DSC-P72 only).

Adjusting the exposure

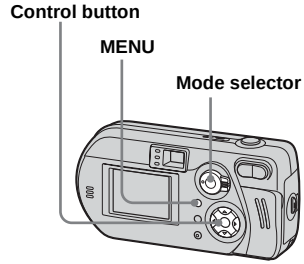
– EV adjustment

Mode selector: 📷/🎞

Used when you want to change the automatic exposure to one of your own choice. The value can be set a range from +2.0EV to –2.0EV, in 1/3EV increments.

Before operation

When shooting still images, set 📷 (Camera) to any mode other than [Auto] in the menu settings (page 27).



1 Set the mode selector to 📷 or 🎞.

2 Press MENU.

The menu appears.

3 Select ± (EV) with ◄/►.

The value of the exposure adjustment is displayed.

4 Select the exposure adjustment value.

Select the exposure adjustment value with ▲/▼.
Make your adjustment while confirming the brightness of the background of the subject on the LCD screen.

To return to auto adjust mode

Return the exposure adjustment value to 0EV.

- ⦿ (Metering Mode) is not displayed on the menu of the DSC-P32.
- When the subject is extremely bright or extremely dark, or when you are using the flash, the adjustment may not work.

Shooting techniques

In normal shooting, the camera makes automatic exposure adjustments. Check the image to be shot, if it looks like the image below, you should make manual adjustments. If you are shooting a back-lit person or a snowy scene, make your adjustments in the + plus direction; if you are shooting a dark subject that fills the screen, making your adjustments in the – direction should give the best results.

Underexposured → Adjust in the + direction

Appropriate exposure

Overexposed → Adjust in the – direction

Selecting a metering mode

Mode selector: 📷/🎞

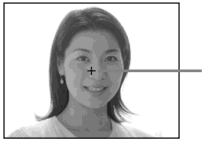
This function enables you to select a metering mode to suit the shooting conditions and purpose.

Multi-pattern metering

The image is divided into multiple regions and metering is performed for each region. The camera judges the subject position and background brightness, and determines a well-balanced exposure.
The camera is set to multi-pattern metering as the factory setting.

Spot metering

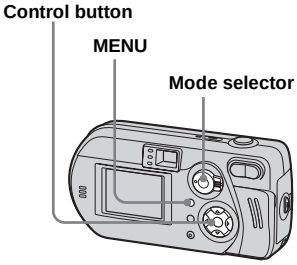
Spot metering lets you adjust the exposure to the subject even when the subject is backlit or there is strong contrast between the subject and the background. Position the spot metering cross hair at the point you want to shoot.



Spot metering cross hair

Before operation

When shooting still images, set 📷 (Camera) to any mode other than [Auto] in the menu settings (page 27).



For the DSC-P72

1 Set the mode selector to 📷 or 🎞.

2 Press MENU.

The menu appears.

3 Select ● (Metering Mode) with ◄/►, then select [Multi] or [Spot] with ▲/▼.

For the DSC-P32

1 Set the mode dial to 📷 or 🎞.

2 Press ► (●) on the control button to turn spot metering on.

The spot metering cross hair appears.

To cancel spot metering

Press ► (●) again to turn spot metering off. The spot metering cross hair disappears, and the camera returns to multi-pattern metering.

Adjusting color tones

– White Balance

Mode selector: 📷/🎞

When the white balance is set to Auto, the white balance is set automatically in response to the condition of the subject, and the overall color balance is adjusted accordingly. When you want to fix the conditions under which the image is captured, or when shooting under special lighting conditions, you can select the settings manually.

☼ (Incandescent)

- Used when shooting, for example, at a party, where the lighting conditions change often.
- Used in a studio, or under video lights.

(Fluorescent)

Used when shooting under fluorescent lights.

☁ (Cloudy)

Used when shooting under a cloudy sky.

☀ (Daylight)

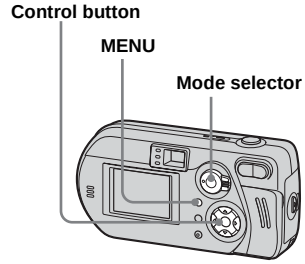
Used when shooting outdoors, and for shooting at night, under neon lights, for fireworks, sunrise, and twilight gloom.

Auto (No indicator)

The white balance is adjusted automatically.

Before operation

When shooting still images, set 📷 (Camera) to any mode other than [Auto] in the menu settings (page 27).



1 Set the mode selector to 📷 or 🎞.

2 Press MENU.

The menu appears.

3 Select [WB] (White Bal) with ◄/►, then select the desired setting with ▲/▼.

To return to automatic settings

In Step **3**, select [Auto].

- Under fluorescent lights that flicker, even if you choose , the white balance may not be properly adjusted.
- When the flash is triggered, the manual setting of white balance is cancelled, and the shooting of the image is done in Auto mode.

Shooting techniques

The color of the subject that you see will be captured according to the lighting conditions. Under the bright summer sun, everything will appear bluish, under a light sources like a light bulb, white objects will appear reddish. The human eye has an excellent ability to adjust. Even when lighting conditions change, the eye can adjust and recognize the correct color almost instantly. However, digital still cameras are greatly influenced by light. Normally, this camera adjusts automatically, but if you notice that the color of the entire image seems to be a bit unnatural when replaying an image on the LCD screen, it is recommended that you adjust the white balance.

Adjusting the flash level

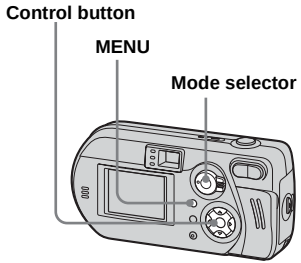
– Flash level

Mode selector:

You can adjust the amout of flash light.

Before operation

Set (Camera) to any mode other than [Auto] in the menu settings (page 27).



1 Set the mode selector to .

2 Press MENU.

The menu appears.

3 Select [±] (Flash Level) with ◄/►, then select the desired setting with ▲/▼.

High: Makes the flash level higher than normal.
Normal: Normal setting.
Low: Makes the flash level lower than normal.

- You can carry out this operation even when the mode selector is set to (Clip Motion only).

Shooting multiple frames

– Clip Motion

Mode selector: 🎞

You can shoot a number of still images consecutively (GIF animation). Because the file size is small, these images are ideal for use on a home page, or for attaching to an e-mail message.

- Clip Motion images are restricted to color levels of 256 colors and below. This is a characteristic of GIF format recording. For this reason, the image quality of some images may deteriorate.

Normal (160×120)

The maximum number of frames you can shoot in one Clip Motion shot is 10. This is suitable for use on a home page.

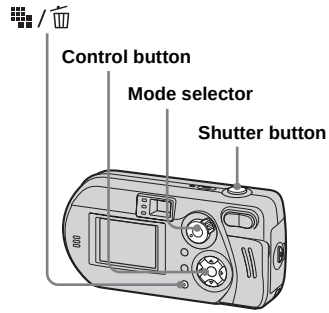
Mobile (120×108)

Two frames is the maximum number that can be shot in Clip Motion in this mode. This is suitable for use with portable data terminals.

- Mobile mode has strict file size limits, so picture quality falls accordingly.

Before operation

Set [Moving Image] to [Clip Motion] in the SET UP settings (pages 45, 106).



1 Set the mode selector to 🎞.

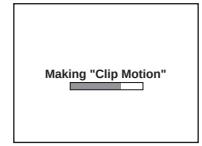
2 Press / (Image Size).

The Image Size setup item appears.

3 Select the desired mode with ▲/▼.

You can select from [Normal] or [Mobile].

4 Shoot one frame.



5 Shoot the next frame.

Press the shutter button once to shoot the next frame, then repeat this operation until you have shot the desired number of frames.

6 Press ●.

All of the frames will be saved in the "Memory Stick."

To delete shot images in the midst of shooting

1 In Steps **4** or **5**, press ◀ (). Shot images will be played back in order, playback stops when the last image is reached.

2 Press / (Delete), and select either [Delete Last] or [Delete All], then press ●.

3 Select [Delete], then press ●. If you chose [Delete Last] in Step **2**, repeat Steps **1** to **3** to delete the images in order, from the latest one shot.

- If you do not complete Step 6, all the images will not be saved in the “Memory Stick.”
- In Clip Motion, the date and time cannot be inserted.
- When you view Clip Motion images using the Index screen, the images may appear different from the actual image recorded.
- GIF files made on other cameras may not be displayed correctly on this camera.
- For the number of images you can record using Clip Motion, see page 101.

Shooting in Multi Burst mode

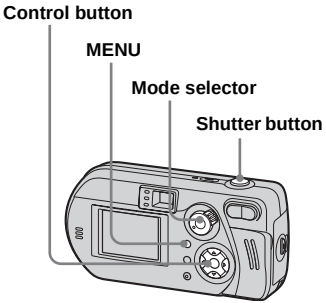
– Multi Burst

Mode selector: 🎞

Pressing the shutter button once records 16 frames in a row. This is convenient for checking your form in sports, for example.

Before operation

Set [Moving Image] to [Multi Burst] in the SET UP settings (pages 45, 106).

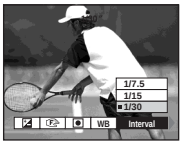


1 Set the mode selector to 🎞.

2 Press MENU.

The menu appears.

3 Select (Interval) with ◄/►, then select the desired between-frame interval with ▲/▼.



You can choose the frame interval from the menu settings (page 104).

4 Shoot your image.

16 frames will be recorded as one image (image size: 1.2M).

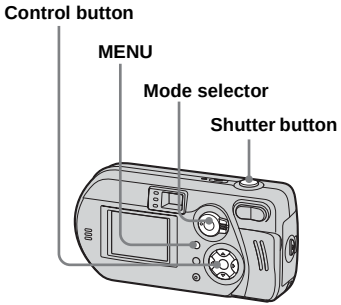
- ● (Metering Mode) is not displayed on the menu of the DSC-P32.
- When you play back images recorded in Multi Burst mode on the camera, see page 65.
- For the number of images that can be recorded, see page 101.
- The flash cannot be used.
- In Multi Burst, the date and time cannot be inserted.

Shooting two images in succession

– Burst 2

Mode selector:

You can shoot two images in succession while pressing the shutter button only once.

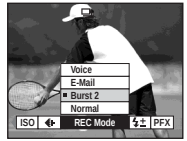


1 Set the mode selector to .

2 Press MENU.

The menu appears.

3 Select [Mode] (REC Mode) with ◄/►, then select [Burst 2] with ▲/▼.



4 Shoot your image.

You can do the next shooting after "Recording" disappears from the LCD screen.

To return to normal mode

In Step 3, select [Normal].

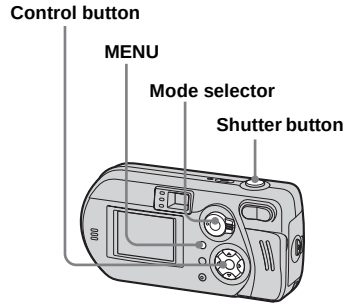
- The flash cannot be used.
- The image is not displayed during shooting. Compose the picture before pressing the shutter button.
- The interval needed for recording is about 0.5 second.

Shooting still images for e-mail

– E-Mail

Mode selector:

You can shoot images and save them in a file that is small enough (320×240) to attach to an e-mail message. The normal mode image that was selected using the Image Size setup item (page 24) is also recorded.



1 Set the mode selector to .

2 Press MENU.

The menu appears.

3 Select [Mode] (REC Mode) with ◄/►, then select [E-Mail] with ▲/▼.

4 Shoot your image.

You can do the next shooting after "Recording" disappears from the LCD screen.

To return to normal mode

In Step 3, select [Normal].

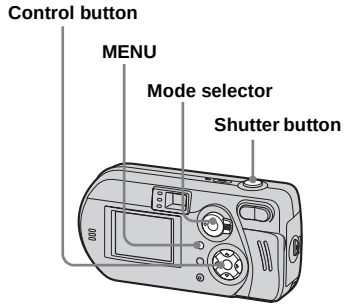
- For instructions on how to attach your images to an e-mail message, refer to the Help files of the e-mail software you are using.
- For the number of images that can be recorded, see page 101.

Shooting still images with audio files

– Voice

Mode selector: 📷

You can record still images with audio files.



1 Set the mode selector to 📷.

2 Press MENU.

The menu appears.

3 Select [Mode] (REC Mode) with ◄/►, then select [Voice] with ▲.

4 Shoot your image.

If you press and release the shutter button, sound is recorded for five seconds.

If you hold down the shutter button, sound is recorded until you release the shutter button for up to 40 seconds.

To return to normal mode

In Step 3, select [Normal].

- To view images recorded in Voice mode, carry out the same procedure described in "Viewing movies on the LCD screen" (page 73).
- For the number of images that can be recorded, see page 101.

Shooting according to scene conditions

Mode selector:

When shooting night scenes, shooting people at night, shooting landscapes, or shooting a waterfront or a snowscape, use the modes listed below to increase the quality of your images.

Twilight mode

Under dark lighting conditions, you can shoot a distant night view. However, because the shutter speed is slower under these conditions, we recommend you use a tripod.

- You cannot shoot in Macro mode.
- The flash cannot be used.

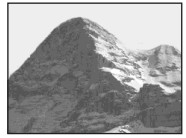
Twilight portrait mode

Use this mode when shooting people in the foreground at night. This mode allows you to shoot images of people in the foreground with distinct outlines without losing the feeling that you are shooting at night. Because the shutter speed is slow, it is recommended that you use a tripod.

- The flash forcely strobes.

Landscape mode

Focuses on images far away, so is convenient for shooting landscapes at a distance.



- You cannot shoot in Macro mode.
- The flash is set to (Forced flash) or (No flash).

Snow mode

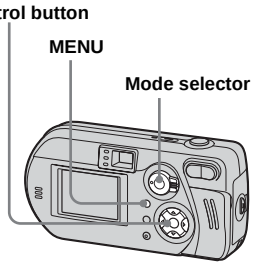
When the whole of the screen turns white, such as when you are shooting a snowscape, use this mode. This mode prevents the image from losing color and brighten each color.

- The flash is set to (Forced flash) or (No flash).

Beach mode

When shooting at the seaside or the lakeside, the blue of the sea is clearly recorded.

- The flash is set to (Forced flash) or (No flash).



1 Set the mode selector to 📷

2 Press MENU.

The menu appears.

3 Select 📷 (Camera) with ◄, then select the desired mode with ▲/▼.

To return to the normal shooting

In Step 3, select [Auto] or [Program].

- The setting is maintained even when the power is turned off.
- Even when you select Twilight or Twilight portrait mode in Burst 2 mode, the shutter speed setting of the Burst 2 mode has priority. So, the image may not be recorded exactly as you intended.

NR slow shutter

The NR slow shutter mode removes noise from recorded images, providing clear images. When the shutter speed is slow, the camera automatically works the NR slow shutter mode and "NR" is indicated next to the shutter speed indicator.

Press the shutter button fully down.

↓

Then the screen turns black.

↓

Finally, when "Processing" disappears, the image has been recorded.

- To eliminate the effects of vibration, use of a tripod is recommended.

Adding special effects

– Picture Effect

Mode selector: 📷/🎞

You can add special effects to bring out the contrast in your images.

Solarize

Like an illustration with clearly delineated bright and dark portions

B&W

In black and white

Sepia

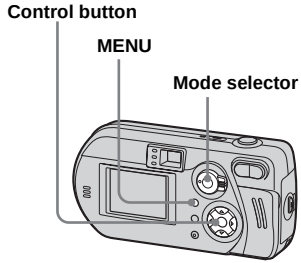
Colored to look like an old photograph

Neg.Art

Made to look like a negative image

Before operation

When shooting still images, set 📷 (Camera) to any mode other than [Auto] in the menu settings (page 27).



1 Set the mode selector to 📷 or 🎞.

2 Press MENU.

The menu appears.

3 Select [PFX] (P.Effect) with ◄/►, then select the desired mode with ▲/▼.

To cancel Picture Effect

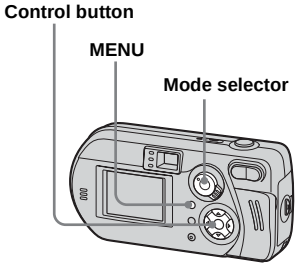
In Step 3, select [Off].

Selecting the folder and playing back images

– Folder

Mode selector: ▶

Select the folder that images you want to play back are stored.



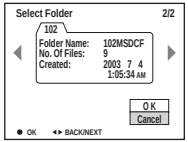
1 Set the mode selector to ▶.

2 Press MENU.

The menu appears.

3 Select [Folder] with ◀, then press ●.

4 Select the desired folder with ◀/▶.



5 Select [OK] with ▲, then press ●.

To cancel the selection

In step **5**, select [Cancel].

When multiple folders are created in the "Memory Stick"

When the first or last image in the folder is displayed, the following icons are indicated on the screen.

: Moves to the previous folder.

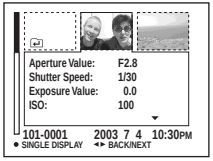
: Moves to the next folder.

: Moves to both the previous and next folders.

On the single screen

On the Index (nine-image) screen

On the Index (triple-image) screen

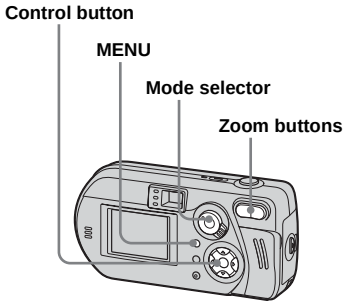


- When no images are stored in the folder, "No file in this folder" appears.
- You can play back images from a last-shot one without selecting the folder.

Enlarging a portion of a still image

Mode selector: ▶

You can enlarge an image up to five times the size of the original image. You can also record the enlarged image as a new file.



Enlarging an image
– Playback zoom

1 Set the mode selector to ▶.

2 Display the image you want to enlarge.

3 Press the zoom T button to enlarge the image.

4 Select a portion of the image to enlarge with ▲/▼/◀/▶.

▲: To view a portion of the top of the image
▼: To view a portion of the bottom of the image
◀: To view a portion of the left side of the image
▶: To view a portion of the right side of the image

5 Adjust the zoom with the zoom W/T buttons.

To cancel enlarged viewing

Press ●.

- You cannot use Playback zoom with movies (MPEG movie), or images recorded in Clip Motion/Multi Burst modes.
- If you press the zoom W button when you are viewing images that have not been enlarged, the Index screen will appear (page 37).
- The images displayed in Quick Review (page 28) can be enlarged using the procedures outlined in Steps 3 to 5.

Recording an enlarged image – Trimming

1 After you have viewed an image using playback zoom, press MENU.

The menu appears.

2 Select [Trimming] with ►, then press ●.

3 Select the image size with ▲/▼, then press ●.

The image is recorded, and the screen image returns to the size it was before enlargement.

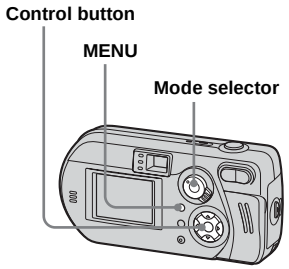
- The trimmed image is recorded in the recording folder as the newest file, and the original image is retained.
- The trimmed image may suffer some deterioration in image quality.
- You cannot trim to 3:2-sized image.

Playing back successive images

– Slide show

Mode selector: ▶

You can play back recorded images in succession, one after another. This is useful for checking your images, or for giving a presentation.



1 Set the mode selector to ▶.

2 Press MENU.

The menu appears.

3 Select [Slide] with ◄/►, then press ●.

Set the following items with ▲/▼/◄/►.

Interval settings
3 sec/5 sec/10 sec/30 sec/1 min

Image
Folder: Plays back all the images in the selected folder.
All: Plays back all the images in the "Memory Stick."

Repeat
On: Plays the images back repeatedly.
Off: Plays through the images one time and then stops.

4 Select [Start] with ▼/►, then press ●.

The slide show begins.

To cancel the slide show setting

In Step **3**, select [Cancel].

To stop slide show playback

Press ●, select [Exit] with ►, then press ●.

To skip to the next/previous image during slide show

Press ▶ (next), or ◀ (previous).

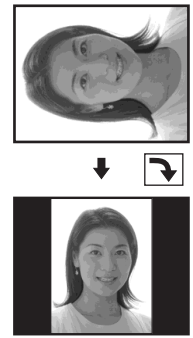
- The interval settings are just guidelines. The actual intervals differ, based on factors like the size of the image.

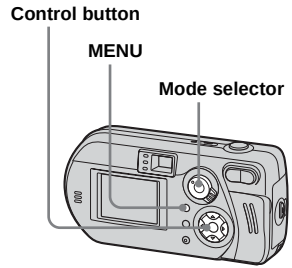
Rotating still images

– Rotate

Mode selector: ▶

Images shot when holding the camera vertically can be rotated and displayed horizontally.





1 Set the mode selector to ▶, and display the image you want to rotate.

2 Press MENU.

The menu appears.

3 Select [Rotate] with ◀/▶, then press ●.

4 Select ↶ ↷ with ▲, and rotate the image with ◀/▶.

5 Select [OK] with ▲/▼, then press ●.

To cancel the rotation

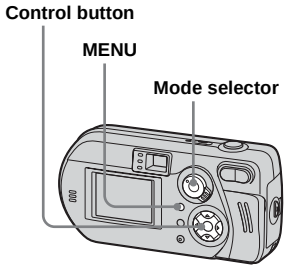
In Step 4 or 5, select [Cancel].

- Protected images, movies (MPEG movie), or images recorded in Clip Motion/Multi Burst modes cannot be rotated.
- You may not be able to rotate images shot with other cameras.
- Also, when viewing images on a computer, the image rotation information may not be reflected depending on the application software.

Playing back images shot in Multi Burst mode

Mode selector: ▶

You can play back Multi Burst images continuously or play them back frame by frame. This function is used for checking the images.



- When the images are played back on a computer, the 16 frames you shot will all be displayed at the same time as part of one image.
- When Multi Burst images are played back on a camera without the Multi Burst feature, the 16 frames will all be displayed at the same time, as part of one image, just as they are on a computer.

Playing back continuously

1 Set the mode selector to ▶.

2 Select the Multi Burst image with ◀/▶.

The selected Multi Burst image is played back continuously.

To pause

Press ●. To resume playback, press ● again. The playback starts from the frame displayed on the LCD screen.

Playing back frame by frame – Jog playback

1 Set the mode selector to ▶.

2 Select the Multi Burst image with ◀/▶.

The selected Multi Burst image is played back continuously.

3 Press ● when the desired frame is displayed.

"Step" appears.

4 Advance the frame with ◀/▶.

▶:The next frame is displayed. When you press and hold ▶, the frame advances.

◀:The previous frame is displayed. When you press and hold ◀, the frame advances in the reverse direction.

To return to normal playback

In Step 4, press ●. The playback starts from the frame displayed on the LCD screen.

To delete shot images

When using this mode, you cannot delete only certain frames. When you delete images, all 16 of the frames are deleted at the same time.

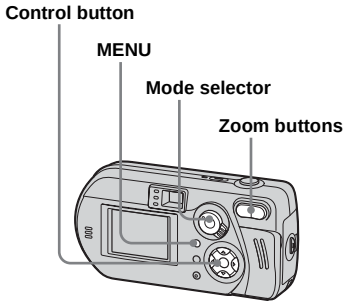
1. Display the Multi Burst image you want to delete.
2. Press / (Delete).
3. Select [Delete], then press ●.
   All of the frames are deleted.

Protecting images

– Protect

Mode selector: ▶

To prevent accidental erasure of an important image, you can protect it.



On the single screen

1 Set the mode selector to ▶.

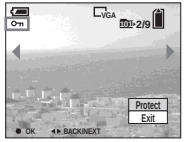
2 Display the image you want to protect with ◀/▶.

3 Press MENU.

The menu appears.

4 Select [Protect] with ◀/▶, then press ●.

The image currently being displayed is now protected, and the 🔑 (Protect) mark is indicated on the screen.



5 To protect other images, display the image you want to protect with ◀/▶, then press ●.

To cancel the protection

In Step 4 or 5, press ● again. The 🔑 mark disappears.

On the Index (nine-image) screen

1 Set the mode selector to ▶, press the zoom W (index) button once to switch to the Index (nine-image) screen.

2 Press MENU.

The menu appears.

3 Select [Protect] with ◀/▶, then press ●.

4 Select [Select] with ◀/▶, then press ●.

5 Select the image you want to protect with ▲/▼/◀/▶, then press ●.

The green 🔑 (Protect) mark is indicated on the selected image.

6 To protect other images, repeat Step 5.

7 Press MENU.

8 Select [OK] with ▶, then press ●.

The mark turns white and the selected image is protected.

To cancel the protection

In Step 4, select [Cancel], or in Step 8, select [Exit].

To release protection

In Step 5, select an image for which you want to release protection with ▲/▼/◀/▶, and press ●. The mark turns gray and repeat this operation for all the images for which you want to release protection. Then, press MENU, select [OK], and press ●.

To protect all the images in folder

In Step 4, select [All In Folder], then press ●. Next, select [On], then press ●.

To release protection of all the images in the folder

In Step 4, select [All In Folder], and press ●. Then select [Off], and press ●.

On the Index (triple-image) screen

1 Set the mode selector to , press the zoom W (index) button twice to switch to the Index (triple-image) screen.

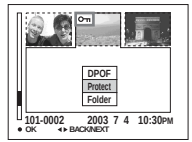
2 Move the image you want to protect to the center with ◀/▶.

3 Press MENU.

The menu appears.

4 Select [Protect] with ▲/▼, then press ●.

The center image is protected, and the (Protect) mark is indicated on that image.



5 To protect other images, move the image you want to protect to the center with ◀/▶, and repeat Step 4.

To release protection

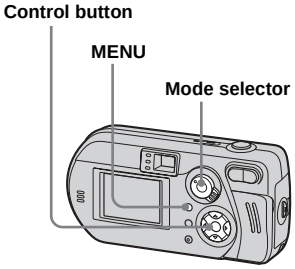
In Step 4, select the image from which you want to release protection, and press ●. To release protection from all of your images, repeat this process for each of them.

Changing image size

– Resize

Mode selector: ▶

You can change the image size of a recorded image, and save it as a new file. You can resize to the following sizes.
3.1M, 2.0M, 1.2M, and VGA.
The original image is retained even after resizing.



1 Set the mode selector to ▶.

2 Display the image you want to resize with ◀/▶.

3 Press MENU.

The menu appears.

4 Select [Resize] with ◀/▶, then press ●.

5 Select the new size with ▲/▼, then press ●.

The resized image is recorded in the recording folder as the newest file.

To cancel the resizing

In Step 5, select [Cancel].

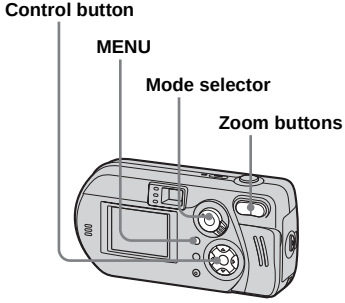
- Movies (MPEG movie), or images recorded in Clip Motion/Multi Burst modes cannot be resized.
- When images are resized from a smaller to a larger size, the image quality will deteriorate.
- You cannot resize to 3:2-sized image.
- If you try to resize a 3:2-sized image, black bands will appear at the top and bottom of the image.

Choosing images to print

– Print (DPOF) mark

Mode selector: ▶

You can designate certain images to be printed.
This mark is convenient when you want to print images at a shop that conforms with the DPOF (Digital Print Order Format) standard.



- You cannot mark movies (MPEG movie) or images recorded in Clip Motion mode.
- In E-Mail mode, the print (DPOF) mark is marked on the normal size image that was recorded at the same time.
- When you mark images shot in Multi Burst mode, all the images are printed on one sheet divided into 16 panels.

On the single screen

1 Set the mode selector to ▶.

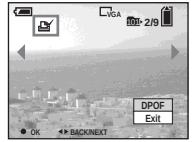
2 Display the image you want to print with ◀/▶.

3 Press MENU.

The menu appears.

4 Select [DPOF] with ◀/▶, then press ●.

The mark is indicated on this image.



5 To mark other images, display the image you want to mark with ◀/▶, then press ●.

To delete the mark

In Step 4 or 5, press ● again. The mark disappears.

On the Index (nine-image) screen

1 Set the mode selector to ▶ and press the zoom W (index) button once to switch to the Index (nine-image) screen.

2 Press MENU.

The menu appears.

3 Select [DPOF] with ▶, then press ●.

4 Select [Select] with ◀/▶, then press ●.

- You cannot mark using the [All In Folder] option.

5 Select the images you want to print with ▲/▼/◀/▶, then press ●.

The green mark is indicated on the selected image.

6 To mark other images, repeat Step 5 for each of them.

7 Press MENU.

8 Select [OK] with ►, then press ●.

The mark turns white and the setting is completed.

To delete the mark

In Step 5, select the image you want to delete the mark with ▲/▼/◄/►, and press ●.

To delete all the marks from the images in the folder

In Step 4, select [All In Folder], then press ●. Next, select [Off], then press ●.

To cancel the marking

In Step 4, select [Cancel] or in Step 8, select [Exit].

On the Index (triple-image) screen

1 Set the mode selector to ►, press the zoom W (index) button twice to switch to the Index (triple-images) screen.

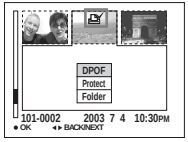
2 Move the image you want to print to the center with ◄/►.

3 Press MENU.

The menu appears.

4 Select [DPOF] with ▲, then press ●.

The mark is indicated on the center image.



5 To mark other images, move the image you want to print to the center with ◄/►, and repeat Step 4.

To delete the mark

In Step 4, press ● again.

The mark disappears. To delete the marks from all of your images, repeat this process for each of them.

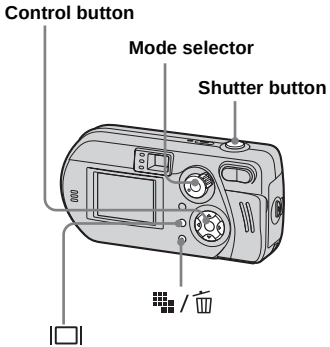
Shooting movies

Mode selector: 🎞

You can shoot movies (MPEG movies).

Before operation

Set [Moving Image] to [MPEG Movie] in the SET UP settings (pages 45, 106).



1 **Set the mode selector to 🎞.**

2 **Press / (Image Size).**

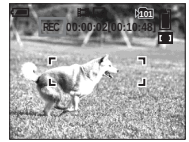
The Image Size setup item appears.

3 **Select the desired mode with ▲/▼.**

You can choose from 640 (VGA) or 160 (Mail).
See page 101 for the recording time allowed for each image size.

4 **Press the shutter button fully down.**

"REC" appears on the screen and the camera starts recording the image and sound.



- When the capacity of the "Memory Stick" is used up, recording stops.

5 **Press the shutter button fully down again to stop recording.**

Indicators on the screen while you are shooting movies

These indicators are not recorded.
Each time you press |▭|, the status of the LCD screen changes as follows: Indicators off → LCD off → Indicators on. See page 114 for a detailed description of the indicated items.

To shoot close-ups (Macro) (DSC-P72 only)

Set the mode selector to 🎞 and follow the procedure on page 30.

To shoot with a self-timer

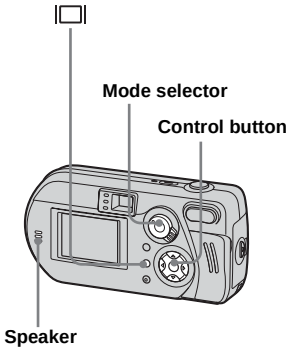
Set the mode selector to 🎞 and follow the procedure on page 31.

- Be careful not to touch the microphone (pages 10, 12) during shooting.
- The flash cannot be used.
- In MPEG movie, the date and time cannot be inserted.
- You cannot change the zoom scaling while shooting movies.

Viewing movies on the LCD screen

Mode selector: ▶

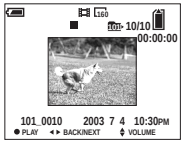
You can view movies on the LCD screen of the camera and hear sounds from the speaker of the camera.



1 Set the mode selector to ▶.

2 Select the desired movie with ◀/▶.

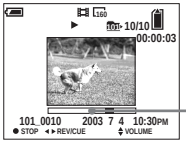
Movies with the image size [160 (Mail)] are displayed a size smaller than still images.



Movies with the image size [640 (VGA)] are displayed on the full screen.

3 Press ●.

The movie images and sound are played back.
▶ (playback) appears on the LCD screen while a movie is playing back.



Playback bar

To stop playback

Press ●.

To adjust the volume

Press ▲/▼.

To fast-forward / rewind

Press ▶ (next) or ◀ (previous) while playing back a movie.
To return to normal playback, press ●.

Indicators on the screen while you are viewing movies

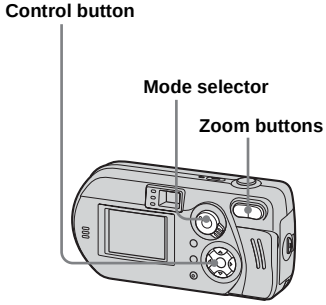
Each time you press |□|, the status of the LCD screen changes as follows: Indicators off → LCD off → Indicators on. See page 115 for a detailed description of the indicated items.

- The procedure for viewing movies on a TV is the same as that for viewing still images (page 38).
- A movie recorded using other Sony devices is displayed a size smaller than still images.

Deleting movies

Mode selector: ▶

You can delete unwanted movies.



On the single screen

1 Set the mode selector to ▶.

2 Select the movie you want to delete with ◀/▶.

3 Press / (Delete).

The movie has not yet been deleted at this point.

4 Select [Delete] with ▲, then press ●.

"Memory Stick access" appears on the screen. When this message disappears, the image has been deleted.

5 To delete other movies, display the movie you want to delete with ◀/▶, then repeat Step 4.

To cancel the deletion

In Step 4 or 5, select [Exit].

On the Index (nine-image) screen

1 Set the mode selector to ▶ and press the zoom W (index) button once to display an Index (nine-image) screen.

2 Press / (Delete).

3 Select [Select] with ◀/▶, then press ●.

4 Select the movies you want to delete with ▲/▼/◀/▶, then press ●.

The (Delete) mark is indicated on the selected movie.

The movie has not yet been deleted at this point.

5 Repeat Step 4 to delete other movies.

6 Press / (Delete).

7 Select [OK] with ▶, then press ●.

"Memory Stick access" message appears on the screen. When this message disappears, the movie has been deleted.

To cancel the deletion

In Step 3 or 7, select [Exit].

To delete all the images in the folder

In Step 3, select [All In Folder], then press ●. Next, select [OK], then press ●. To cancel the deletion, select [Cancel] with ◀, then press ●.

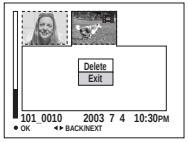
On the Index (triple-image) screen

1 Set the mode selector to ▶ and press the zoom W (index) button twice to switch to the Index (triple-image) screen.

2 Move the movie you want to delete to the center with ◀/▶.

3 Press ▦/🗑 (Delete).

The menu appears.



The movie has not yet been deleted at this point.

4 Select [Delete] with ▲, then press ●.

"Memory Stick access" message appears on the screen. When this message disappears, the movie has been deleted.

To cancel the deletion

In Step 4, select [Exit].

Editing movies

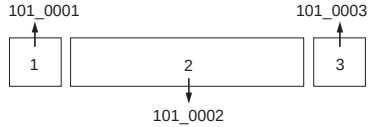
Mode selector: ▶

You can cut movies, or delete unnecessary portions of movies. This is the recommended mode to use when the “Memory Stick” capacity is insufficient, or when you attach movies to your e-mail messages.

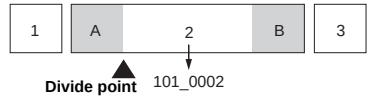
The file numbers assigned when movies are cut

The cut movies are assigned new numbers and recorded as the newest files in the recording folder. The original movie is deleted and its file number is skipped.

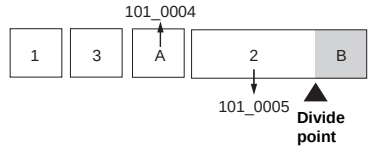
<Example> Cutting the movie numbered 101_0002



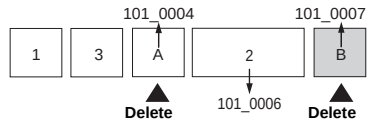
1. Cutting scene A.



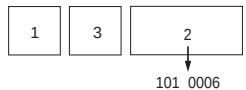
2. Cutting scene B.



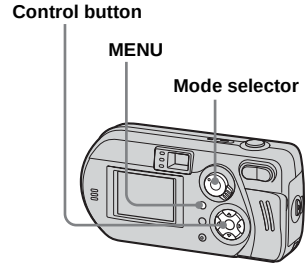
3. Deleting scenes A and B if they are unnecessary.



4. Only the desired scenes remain.



Cutting movies



1 Set the mode selector to ▶.

2 Select the movie you want to cut with ◀/▶.

3 Press MENU.

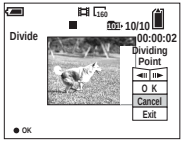
The menu appears.

4 Select [Divide] with ▶, then press ●. Next, select [OK] with ▲, then press ●.

The playback of the movie starts.

5 Decide on a cutting point.

Press ● at the desired cutting point.



When you want to adjust the cutting point, select [◄II/II►] (frame forward/ rewind) and adjust the cutting point with ◄/ ►. If you want to change the cutting point, select [Cancel]. The playback of the movie starts again.

6 When you have decided on a cutting point, select [OK] with ▲/▼, and press ●.

7 Select [OK] with ▲ , then press ●.

The movie is cut.

To cancel cutting

In Step 5 or 7, select [Exit]. The movie appears on the screen again.

- You cannot cut the following images.
  - Clip Motion
  - Multi Burst
  - Still image
  - Movies not long enough to cut
  - Protected movie
- You cannot restore movies once you cut them.
- The original movie is deleted when you cut it.
- The cut movie is recorded in the selected recording folder as a newest file.

Deleting unnecessary portions of movies

1 Cut an unnecessary portion of a movie (page 76).

2 Display the portion of the movie you want to delete.

3 Press / (Delete).

The movie has not yet been deleted at this point.

4 Select [Delete] with ▲ , then press ●.

The movie currently displayed on the screen is deleted.

Copying images to your computer – For Windows users

Recommended computer environment

OS: Microsoft Windows 98, Windows 98SE, Windows 2000 Professional, Windows Millennium Edition, Windows XP Home Edition, or Windows XP Professional
The above OS must be installed at the factory. Operation is not assured in an environment upgraded to the operating systems described above or in a multi-boot environment.
CPU: MMX Pentium 200 MHz or faster
USB connector: Provided as standard
Display: 800 × 600 dots or more
High Color (16-bit color, 65 000 colors) or more

- If you connect two or more USB equipment to a single computer at the same time, some equipment, including your camera, may not operate depending on the type of USB equipment.
- Operations are not guaranteed when using a USB hub.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

USB mode

There are two modes for a USB connection, [Normal] and [PTP]* modes. The factory setting is the [Normal] mode.

* Compatible only with Windows XP. When connected to a computer, only the data in the folder selected by the camera is copied to the computer.

Communication with your computer

When your computer resumes from the suspend or sleep mode, communication between your camera and your computer may not recover at the same time.

When a USB connector is not provided on your computer

When neither a USB connector nor a "Memory Stick" slot is provided, you can copy images using an additional device. See the Sony Website for details.
http://www.sony.net/

Contents of the CD-ROM

■ USB Driver

This driver is needed in order to connect the camera to a computer.
When using Windows XP, you need not install the USB driver.

■ Image Transfer

This application is used to easily transfer images from the camera to a computer.

■ ImageMixer

This application is used to display and edit images that are stored in a computer.

- This section describes the procedures using Windows Me as an example. The required operations may differ depending on your OS.
- **Close down all applications running on the computer before installing the USB driver and application.**
- When using Windows XP or Windows 2000, log on as Administrators.
- The display settings should be 800 × 600 dots or more and High Color (16-bit color, 65 000 colors) or more. When set to less than 800 × 600 dots or 256 colors or less, the install title screen does not appear.

Installing the USB driver

When using Windows XP, you need not install the USB driver.
Once the USB driver is installed, you need not install the USB driver.

1 Turn on your computer, and insert the supplied CD-ROM into the CD-ROM drive.

Do not connect your camera to your computer at this time.

The model selection screen appears. If it does not appear, double-click (My Computer) → [ImageMixer] in that order.

2 Click [Cyber-shot] on the model selection screen.

The installation menu screen appears.

3 Click [USB Driver] on the title screen.

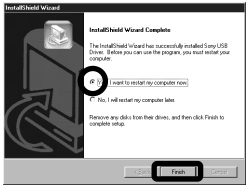
The “InstallShield wizard” screen appears.

4 Click [Next]. When the “Information” screen appears, click [Next].

InstallShield Wizard
Welcome to the InstallShield Wizard for Sony USB Driver
The InstallShield® Wizard will install Sony USB Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

The USB driver installation starts. When the installation is completed, the screen informs you of completion.

5 Click [Yes, I want to restart my computer now], then click [Finish].


InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Sony USB Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Your computer restarts. Then, you can establish USB connection.

Installing "Image Transfer"

You can use the "Image Transfer" software to copy images to your computer automatically when you connect the camera to your computer.

1 Click [Cyber-shot] on the model selection screen.

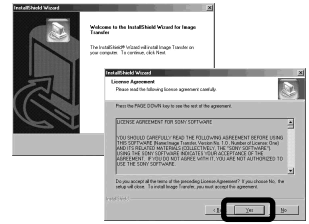
The installation menu screen appears.

2 Click [Image Transfer] on the installation menu screen. Select the desired language, then click [OK].

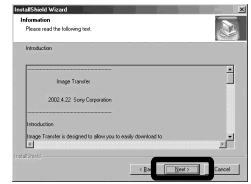
The "Welcome to the InstallShield Wizard" screen appears.

3 Click [Next]. When "License Agreement" screen appears, click [Yes].

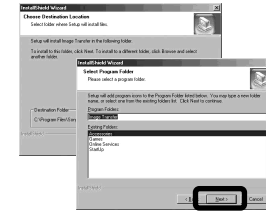
Read the agreement carefully. If you accept the terms of the agreement, proceed with the installation. The "Information" screen appears.



4 Click [Next].



5 Select the folder to be installed, then click [Next]. Select the program folder, then click [Next].



6 Confirm if the checkbox is checked on the "Image Transfer Settings" screen, then click [Next].

When the installation is completed, the screen informs you of completion.

• This section describes the English screen.

7 Click [Finish].

The “InstallShield Wizard” screen closes.
If you wish to continue with the installation of “ImageMixer,” click [ImageMixer] on the title screen and then follow the procedure.

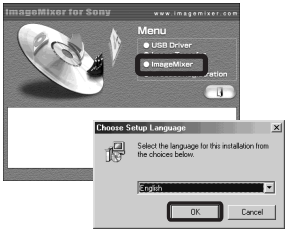
- The USB driver is needed in order to use “Image Transfer.” If the necessary driver is not already installed on your computer, a screen that asks if you want to install the driver will appear. Follow the instructions that appear on the screen.

Installing “ImageMixer”

You can use the “ImageMixer Ver. 1.5 for Sony” software to copy, view and edit images. For details, see the software’s help files.

1 Click [ImageMixer] on the installation menu screen. Select the desired language, then click [OK].

The “Welcome to the InstallShield Wizard” screen appears.



- This section describes the English screen.

2 Follow instructions on each succeeding screen.

Install “ImageMixer” according to the screen.

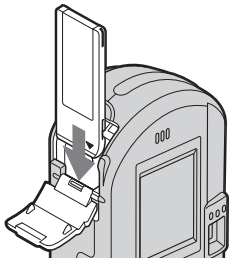
- When you use Windows 2000 or Windows XP, install “WinASPI.”
- If DirectX8.0a or a later version is not installed in your computer, the “Information” screen appears. Follow the procedure on the screen.

3 Restart your computer according to the screen.

4 Remove the CD-ROM.

Connecting the camera to your computer

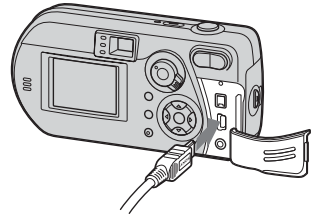
1 Insert the "Memory Stick" with the images you want to copy into the camera.



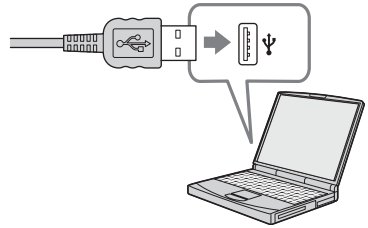
- Be sure to use fully charged nickel-metal hydride batteries or the AC Adaptor (not supplied). When you copy images to your computer using weak batteries, copying may fail or the data may be corrupted if the camera shuts off due to weak batteries.
- For further details on the AC Adaptor, see page 19.
- For further details on the "Memory Stick," see page 23.

2 Turn on your computer and the camera.

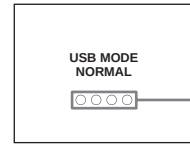
3 Connect the supplied USB cable to the (USB) jack of the camera.



4 Connect the USB cable to your computer.



- When using a desktop computer, connect the USB cable to the USB connector on the rear panel.
- When using Windows XP, the AutoPlay wizard automatically appears on the desktop. Proceed to page 85.



"USB MODE NORMAL" appears on the LCD screen of the camera. When a USB connection is established for the first time, your computer automatically runs the used program to recognize the camera. Wait for a while.

***** During communication, the access indicators turn red.

- If "USB MODE NORMAL" does not appear, confirm that [USB Connect] is set to [Normal] in the SET UP settings (page 107).

Removing the USB cable from your computer, removing the "Memory Stick" from your camera, or turning off the camera during a USB connection

For Windows 2000, Me, or XP users

1. Double-click on the task tray.
2. Click (Sony DSC), then click [Stop].
3. Confirm the device on the confirmation window, then click [OK].
4. Click [OK].
   Step 4 is unnecessary for Windows XP users.
5. Disconnect the USB cable, remove the "Memory Stick," or turn off the camera.

For Windows 98 or 98SE users

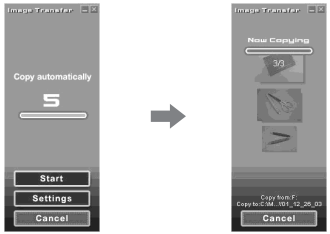
Confirm that the access indicators (page 82) on the LCD screen are turned white and carry out only Step 5 above.

Copying images using "Image Transfer"

– Windows 98/98SE/2000/Me

Connect the camera and your computer with the USB cable.

"Image Transfer" launches and the images are automatically copied to the computer.
When copying is complete, "ImageMixer" automatically launches and images appear.



- Normally "Image Transfer" and "Date" folders are created inside the "My Documents" folder, and all of the image files recorded with the camera are copied into these folders.
- You can change the "Image Transfer" settings (page 84).

– Windows XP

Connect the camera and your computer with the USB cable.

"Image Transfer" starts up automatically and the images are automatically copied to the computer.
Windows XP is set so that the OS AutoPlay Wizard activates.
If you want to cancel the setting, follow the procedure below.

1 Click [Start], then click [My Computer].

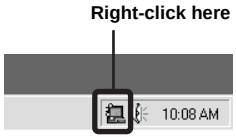
2 Right-click [Sony MemoryStick], then click [Properties].

3 Cancel the setting.

① Click [AutoPlay].
② Set [Content type] to [Pictures].
③ Check [Select an action to perform] under [Actions], select [Take no action], then click [Apply].
④ Set [Content type] to [Video files] and proceed step ③. Set [Content type] to [Mixed content] and proceed step ③.
⑤ Click [OK].
The [Properties] screen closes.
The OS AutoPlay Wizard does not start up automatically even if the USB connection is made next time.

Changing "Image Transfer" settings

You can change "Image Transfer" settings. Right-click the "Image Transfer" icon on the task tray, select [Open Settings]. The settings you can set are as follows: [Basic], [Copy], and [Delete].



When the "Image Transfer" starts, the below window appears.

When you select [Settings] from the above window, you can only change the [Basic] setting.

Copying images without using "Image Transfer"

– Windows 98/98SE/2000/Me

If you do not set to launch "Image Transfer" automatically, you can copy images as following procedure.

1 Double-click [My Computer], then double-click [Removable Disk].

The contents of the "Memory Stick" inserted in your camera appear.

- This section describes an example of copying images to the "My Documents" folder.
- When the "Removable Disk" icon is not shown, see the right column.
- When using Windows XP, see page 85.

2 Double-click [DCIM], then double-click the folder that the image files you want to copy are stored.

The folder opens.

3 Drag and drop the image files into the "My Documents" folder.

The image files are copied to the "My Documents" folder.

- When you try to copy an image to a folder in which an image with the same file name is stored, the overwrite confirmation message appears. Clicking [Yes] overwrites the image. When not overwriting the image, click [No] or change the file name.

When a removable disk icon is not shown

1 Right-click [My Computer], then click [Properties].
The "System Properties" screen appears.
- For Windows 2000 users, click the [Hardware] tab on the "System Properties" screen.

2 Confirm if other devices are already installed.
① Click [Device Manager].
② Double-click [? Other Devices].
③ Confirm if there is a "? Sony DSC" with a ? mark.

3 If you find either of the devices above, follow the steps below to delete them.
① Click [? Sony DSC].
② Click [Remove]. (In case of Windows 2000, click [Uninstall].)
The "Confirm Device Removal" screen appears.
③ Click [OK].
The device is deleted.

Try the USB driver installation again using the supplied CD-ROM (page 79).

– Windows XP

Copying images using the Windows XP AutoPlay wizard

1 Make a USB connection (page 82). Click [Copy pictures to a folder on my computer using Microsoft Scanner and Camera Wizard], then click [OK].

The “Scanner and Camera Wizard” screen appears.

2 Click [Next].

The images stored on the “Memory Stick” are displayed.

3 Click the checkbox of images that you do not want to copy to your computer to remove the checkmark, then click [Next].

The “Picture Name and Destination” screen appears.

4 Select a name and destination for your pictures, then click [Next].

Image copying starts. When the copying is completed, the “Other Options” screen appears.

5 Select [Nothing. I’m finished working with these pictures], then click [Next].

The “Completing the Scanner and Camera Wizard” screen appears.

6 Click [Finish].

The wizard closes.

- When you want to continue copying other images, carry out “Removing the USB cable from your computer, removing the “Memory Stick” from your camera, or turning off the camera during a USB connection” (page 83). Then, follow the process from step 1 again.

Viewing the images on your computer

1 Double-click [My Documents] on the desktop.

The “My Documents” folder contents are displayed.

- This section describes the procedure for viewing images in the “My Documents” folder.
- When using Windows XP, double-click [Start] → [My Documents] in that order.
- You can use the “ImageMixer Ver. 1.5 for Sony” software to view and edit images on your computer. For details, see the software’s help files.

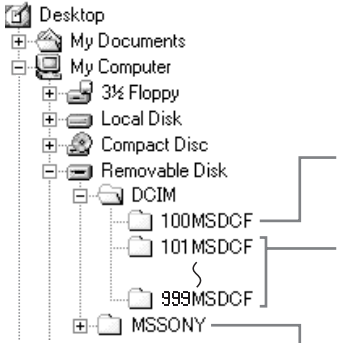
2 Double-click the desired folder and image file.

The image is displayed.

Image file storage destinations and file names

The image files recorded with your camera are grouped as folders in the “Memory Stick.”

Example: when viewing folders on Windows Me



Folder containing image data which was recorded using the camera not equipped with the folder creating function.

Folder containing image data which was recorded using your camera. When not creating any folders, there is only the “101MSDCF” folder.

Folder containing E-Mail mode image data/ movie data/ Voice mode audio data which was recorded using the camera not equipped with the folder creating function.

- You cannot record any images to “100MSDCF” or “MSSONY” folders. The images in these folders are available only for viewing.
- For more information about the folder, see page 46.

Folder	File name	File meaning
101MSDCF to 999MSDCF	DSC0□□□□.JPG	• Still image files shot normally • Multi Burst mode files (page 55) • Still image files shot in – E-Mail mode (page 56) – Voice mode (page 57)
	DSC0□□□□.JPE	• Small-size image files shot in E-Mail mode
	DSC0□□□□.MPG	• Audio files shot in Voice mode
	CLP0□□□□.GIF	• Clip Motion files shot in Normal mode (page 54)
	CLP0□□□□.THM	• Index image files of Clip Motion files shot in Normal mode
	MBL0□□□□.GIF	• Clip Motion files shot in Mobile mode (page 54)
	MBL0□□□□.THM	• Index image files of Clip Motion files shot in Mobile mode
	MOV0□□□□.MPG	• Movie files shot in MPEG Movie mode (page 72)

- `ssss` stands for any number within the range from 0001 to 9999.

- The numerical portions of the following files are the same.
  – A small-size image file shot in E-Mail mode and its corresponding image file
  – An audio file shot in Voice mode and its corresponding image file
  – An image file shot with Clip Motion and its corresponding index image file

Copying images to your computer – For Macintosh users

Recommended computer environment

OS: Mac OS 8.5.1, 8.6, 9.0, 9.1, 9.2, or Mac OS X (v10.0/v10.1/v10.2)
The above OS must be installed at the factory. For the following models, update your OS to Mac OS 9.0 or 9.1.

– iMac with Mac OS 8.6 installed at the factory, and a slot loading type CD-ROM drive
– iBook or Power Mac G4 with the Mac OS 8.6 installed at the factory

USB connector: Provided as standard
Display: 800 × 600 dots or more
32 000-color mode or more

- If you connect two or more USB equipment to a single computer at the same time, some equipment, including your camera, may not operate depending on the type of USB equipment.
- Operations are not guaranteed when using a USB hub.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

USB mode

There are two modes for a USB connection, [Normal] and [PTP]***** modes. The factory setting is the [Normal] mode.

***** Compatible only with Mac OS X. When connected to a computer, only the data in the folder selected by the camera is copied to the computer.

Communication with your computer

When your computer resumes from the suspend or sleep mode, communication between your camera and your computer may not recover at the same time.

When a USB connector is not provided on your computer

When neither a USB connector nor a "Memory Stick" slot is provided, you can copy images using an additional device. See the Sony Website for details.
http://www.sony.net/

Steps your OS requires

Follow the steps below, according to your OS.

OS	Steps
Mac OS 8.5.1/8.6/9.0	Steps 1 to 4
Mac OS 9.1/9.2/Mac OS X (v 10.0/v 10.1/v10.2)	Steps 2 to 4

1 Installing the USB driver

1 Turn on your computer, and set the supplied CD-ROM into the CD-ROM drive.
The model selection screen appears.
2 Click [Cyber-shot] on the model selection screen.
The installation menu appears.
3 Double-click (Setup Menu).
4 Click (USB Driver).
The "USB Driver" screen appears.
5 Double-click the icon of the hard disk containing the OS to open the screen.
6 Drag and drop the following two files from the screen opened in step 4 into the System Folder icon in the screen opened in step 5.
- Sony USB Driver
- Sony USB Shim

7 When the message for confirmation is shown, click "OK."
8 Restart the computer and remove the CD-ROM from the CD-ROM drive.

2 Connecting your camera to your computer

For details, see page 82.

Removing the USB cable from your computer, removing the “Memory Stick” from the camera, or turning off the camera

Drag and drop the drive icon or the icon of the “Memory Stick” to the “Trash” icon, then remove the USB cable, remove the “Memory Stick,” or turn off the camera

- If you are using Mac OS X v10.0, remove the USB cable etc., after you have turned your computer off.

3 Copying images

1. Double-click the newly recognized icon on the desktop.
   The contents of the “Memory Stick” inserted in your camera appear.
2. Double-click “DCIM.”
3. Double-click the folder that the images you want to copy are stored.
4. Drag and drop the image files to the hard disk icon.
   The image files are copied to your hard disk.
   For details on the storage location of the images and file names, see page 86.

4 Viewing the images on your computer

1. Double-click the hard disk icon.
2. Double-click the desired image file in the folder containing the copied files.
   The image file opens.

- **Close down all applications running on the computer before installing the USB driver and application.**
- You can use the “ImageMixer Ver. 1.5 for Sony” software to copy images to your computer and to view images on your computer. For details on installing, see operating instructions supplied with the CD-ROM. For details on operation, see the software’s help files.
- “ImageMixer Ver. 1.5 for Sony” cannot be used with Mac OS X.
- “Image Transfer” cannot be used with Macintosh.

For Mac OS X users

When you click an E-MAIL mode image file, “There is no application available to open the document "DSC0□□□□.JPE".” may be shown. In this case, carry out the follwing setup. The screen may differ depending on your OS version.

1. Click [Choose Application...] on the screen “There is no application available to open the document "DSC0□□□□.JPE".”
2. Change [Recommended Applications] to [All Applications].
3. Select [QuickTime Player] from the application list, then click [Open].

Creating a Video CD

You can create a Video CD using your computer. The created Video CD can be played back on a Video CD-compatible DVD player. When playing back on a computer, use application software used to play back a Video CD.

1 Start “ImageMixer.”

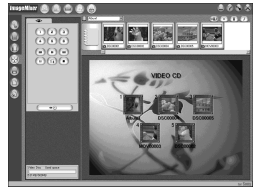
2 Click .

The video CD creating mode turns on.

3 Drag & drop the desired file or album to the menu screen.

The selected image is added to the menu screen.

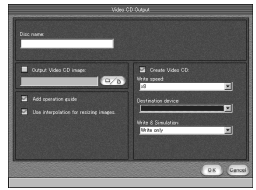
4 Click .



You can preview the image.

5 Click .

The disc creation dialogue appears.



6 Insert a blank CD-R into the CD-R drive and click the [OK] button.

The disc creation process starts.

- You cannot use CD-RW discs.
- A CD-R drive is required to create a Video CD.

For the Macintosh edition

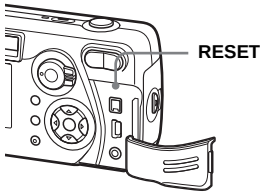
- “Toast” by Roxio (not supplied) is required to create a Video CD.
- The playback time of a movie file on the preview screen may be shorter.

Troubleshooting

If you have trouble with your camera, try the following solutions.

1 Check the items on pages 91 to 97. **If the screen shows "C:□□:□□," the self-diagnosis function is working. Please see page 100.**

2 Press the RESET button located inside the jack cover, then turn on the camera again. (This will clear the date and time settings, etc.)



3 Consult your Sony dealer or local authorized Sony service facility.

Battery and power

Symptom	Cause	Solution
The battery remaining indicator is incorrect. Or the sufficient battery remaining indicator is displayed but the power soon runs out.	• You have used the camera for a long time in an extremely hot or an extremely cold location. • The batteries are discharged. • The battery contacts or the terminals on the battery cover are dirty. • The nickel-metal hydride batteries are exhibiting the "memory effect" (page 15). • A mismatch has occurred in the remaining battery time information. • The batteries are dead (page 111).	— → Install charged batteries (page 14). → Wipe any dirt off from them with a dry cloth (page 16). → To restore the batteries to their original condition, use them until they are drained before recharging them. → Fully charge the batteries (page 14). → Replace the batteries with new ones.
The battery runs down too quickly.	• You are recording/playing back images in an extremely cold location. • The batteries are not charged enough. • The batteries are dead (page 111).	— → Fully charge the batteries (page 14). → Replace the batteries with new ones.
The power cannot be turned on.	• The batteries are not installed properly. • The AC Adaptor (not supplied) is disconnected. • The batteries are discharged. • The batteries are dead (page 111).	→ Properly install the batteries (page 16). → Connect it securely to your camera (page 19). → Install charged batteries (page 14). → Replace the batteries with new ones.

Symptom	Cause	Solution
The power turns off suddenly.	• If you do not operate the camera for about 90 seconds while the power is on, the camera turns off automatically to prevent wearing down the battery (when [Power Save] is [Off], after three minutes.) (page 17). • The batteries are discharged.	→ Turn on the camera again (page 20). → Install charged batteries (page 14).

Shooting still images / movies

Symptom	Cause	Solution
The LCD screen is not turned on even when the power is turned on.	• The power was turned off with the LCD screen turned off the last time you used the camera.	→ Turn on the LCD screen (page 34).
The subject is not visible on the LCD screen.	• The mode selector is not set to 📷 or 🎞.	→ Set the mode selector to 📷 or 🎞 (pages 26, 72).
The image is out of focus.	• The subject is too close. • While shooting still images, 📷 (Camera) is set to 🏔 or 🌙. • You set the focus preset distance.	→ Set the macro recording mode (DSC-P72 only). Make sure to place the lens farther away from the subject than the shortest shooting distance when shooting (page 30). → Cancel the mode (page 58). → Set to the auto focus mode (page 50).
Unable to zoom (DSC-P72 only).	• You cannot zoom while shooting a movie (MPEG movie).	—
Smart zoom does not function.	• You cannot use smart zoom while shooting a movie (MPEG movie). • The LCD screen is turned off. • The image size is set to [3.1M] or [2.8M (3:2)]. • [Smart Zoom] is set to [Off] in the SET UP settings (DSC-P72 only).	— → Turn on the LCD screen (page 34). → Set image size to other settings except [3.1M] and [2.8M (3:2)] (page 29). → Set [Smart Zoom] to [On] (page 106).
The image is too dark.	• You are shooting a subject with a light source behind the subject. • The brightness of the LCD screen is too low.	→ Adjust the exposure (page 50). → Adjust the brightness of the LCD screen (page 107).

Symptom	Cause	Solution
The image is too bright.	• You are shooting a spot lighted subject in a dark location such as on a stage. • The brightness of the LCD screen is too high.	→ Adjust the exposure (page 50). → Adjust the brightness of the LCD screen (page 107).
The image is monochrome (black and white).	• [PFX] (P. Effect) is set to [B&W].	→ Cancel the mode (page 60).
Vertical streaks appear when you are shooting a very bright subject.	• The smear phenomenon is occurring.	→ This is not a malfunction.
You cannot shoot images.	• No “Memory Stick” is inserted. • The capacity of the “Memory Stick” is insufficient. • The write-protect switch on the “Memory Stick” is set to the LOCK position. • You cannot shoot while the flash is charging. • The mode selector is not set to 📷 when you want to shoot a still image. • The mode selector is not set to 🎞 when you want to shoot a movie.	→ Insert a “Memory Stick” (page 23). → Delete the images saved in the “Memory Stick,” or format it. → Change the “Memory Stick.” → Set it to the recording position (page 109). — → Set the mode selector to 📷 (page 26). → Set the mode selector to 🎞 (page 72).
The macro mode does not function (DSC-P72 only).	• When shooting still images, 📷 (Camera) is set to 🌙 or 🏔.	→ Cancel the mode (page 58).
Cannot shoot images with the flash.	• The mode selector is set to ▶ or SET UP. • The flash is set to ⊗ (No flash). • When shooting still images, 📷 (Camera) is set to 🌙. • [Moving Image] is not set to [Clip Motion] in the SET UP settings.	→ Set it to a setting other than ▶, or SET UP (page 32). → Set the flash to “Auto” (No indicator), ϟ (Forced flash), or ϟSL (Slow synchro) (page 32). → Cancel the mode (page 58). → Set it to [Clip Motion] (page 106).
The eyes of the subject come out red.	—	→ Set [Red Eye Reduction] to [On] (page 33).
The date and time are recorded incorrectly.	• The date and time are not set correctly.	→ Set the correct date and time (page 21).

Viewing images

Symptom	Cause	Solution
The image cannot be played back.	• The mode selector is not set to ▶. • You cannot play back the image on the camera, if it is modified on a computer or its folder/file name is changed. • The camera is in USB mode.	→ Set the mode selector to ▶ (page 36). — → Cancel USB communication (page 83).
The image is coarse right after being played back.	—	→ This is not a malfunction.
The images cannot be played back on a TV.	• The [Video Out] setting for the camera in SET UP is incorrect. • The connection is not correct.	→ Set [Video Out] to [NTSC] or [PAL] (page 107). → Check the connection (page 38).
The images cannot be played back on a computer.	—	→ See page 95.
Unknown beeps are heard from the camera while viewing a movie.	• These beeps are heard when the auto focus is working.	→ This is not a malfunction. Shoot in focus preset mode (page 49).

Deleting/editing an image

Symptom	Cause	Solution
Your camera cannot delete an image.	• The image is protected. • The write-protect switch on the "Memory Stick" is set to the LOCK position.	→ Cancel the protection (page 67). → Set it to the recording position (page 109).
You have deleted the image by mistake.	• Once you have deleted an image, you cannot restore it.	→ Protecting the image can prevent accidental erasure (page 67). → The write-protect switch on the "Memory Stick" will prevent you from deleting images by mistake (page 109).
The resizing function does not work.	• Movie (MPEG movie)/Clip Motion/Multi Burst files cannot be resized.	—
You cannot attach a print (DPOF) mark.	• Print (DPOF) marks cannot be attached to movie (MPEG movie)/Clip Motion files.	—

Symptom	Cause	Solution
You cannot cut a movie.	• The movie is not long enough to cut. • Protected movie (MPEG movie), Clip Motion, Multi Burst files and still images cannot be cut.	— —

Computers

Symptom	Cause	Solution
You do not know whether or not your OS can be used with the camera.	—	→ Check “Recommended computer environment” (pages 78, 88).
You cannot install the USB driver.	—	→ In Windows 2000, log on as Administrator (authorized Administrators).
Your computer does not recognize your camera.	• The camera is turned off. • The battery level is too low. • You are not using the supplied USB cable. • The USB cable is not connected securely. • [USB Connect] is set to [PTP] in the SET UP settings. • The USB connectors on your computer are connected to other equipment besides the keyboard, the mouse. • The camera is not directly connected to your computer. • The USB driver is not installed. • Your computer does not properly recognize the device because you connected the camera and your computer with the USB cable before you installed the “USB Driver” from the supplied CD-ROM.	→ Turn on the camera (page 20). → Use the AC Adaptor (not supplied) (page 19). → Use the supplied USB cable (page 82). → Disconnect the USB cable, and securely connect it again. Make sure that “USB MODE” is displayed on the LCD screen (page 82). → Set it to [Normal] (page 107). → Disconnect the USB cables except for those connected to the keyboard and the mouse. → Directly connect the camera and your computer without using a USB hub. → Install the USB driver (page 79). → Delete the erroneously recognized device from your computer, then install the USB driver (pages 79, 84).

Symptom	Cause	Solution
You cannot copy images.	• The camera is not correctly connected to your computer. • The copy procedure differs depending on your OS. —	→ Connect the camera and your computer correctly (page 82). → Follow the copy procedure for your OS (pages 83, 84, 88). → If you are using the “ImageMixer Ver. 1.5 for Sony” software, click on HELP. → If you are using the “Image Transfer” software, see page 83.
After making a USB connection, “Image Transfer” does not automatically start.	— —	→ Select [Launch Image Transfer automatically when the camera, etc., is connected.] at [Basic] setting (page 84). → Make a USB connection when the computer is turned on (page 82).
The image cannot be played back on a computer.	— —	→ If you are using the “ImageMixer Ver. 1.5 for Sony” software, click on HELP. → Consult the computer or software manufacturer.
The image and sound are affected by noise when you play back a movie on a computer.	• You are playing back the movie directly from the “Memory Stick.”	→ Copy the movie to the hard disk of the computer and then play the movie file back from the hard disk (pages 83, 88).
You cannot print an image.	—	→ Check the printer settings. → If you are using the “ImageMixer Ver. 1.5 for Sony” software, click on HELP.
The error message appears when loading the supplied CD-ROM.	—	→ Set the display mode of your computer as follows: For Windows, 800 × 600 dots or more, high color (16-bit color, 65 000 colors) or more. For Macintosh, 800 × 600 dots or more, 32 000 colors or more.

“Memory Stick”

Symptom	Cause	Solution
You cannot insert a “Memory Stick.”	• You are inserting it backwards.	→ Insert it from the right side (page 23).
You cannot record on a “Memory Stick.”	• The write-protect switch on the “Memory Stick” is set to the LOCK position. • The “Memory Stick” is full.	→ Set it to the recording position (page 109). → Delete unnecessary images (pages 40, 74).

Symptom	Cause	Solution
You cannot format a "Memory Stick."	• The write-protect switch on the "Memory Stick" is set to the LOCK position.	→ Set it to the recording position (page 109).
You have formatted a "Memory Stick" by mistake.	• All the data on the "Memory Stick" are erased by formatting.	→ We recommend that you set the "Memory Stick" write-protect switch to the LOCK position to protect accidental erasure (page 109).

Others

Symptom	Cause	Solution
The camera does not work, no operations can be performed.	• The battery level is low or zero (The ⌧ indicator appears.). • The AC Adaptor (not supplied) is not connected securely.	→ Charge the batteries (page 14). → Connect it securely to the DC IN jack of the camera and to a wall outlet (wall socket) (page 19).
The power is on, but the camera does not work.	• The internal system is not working properly.	→ Disconnect, and then, after one minute, reconnect all power sources and turn on the camera. If this does not work, press the RESET button located inside the jack cover with a pointed object, then turn the power on again. (This will clear the date and time settings, etc.)
You cannot identify the indicator on the LCD screen.	—	→ Check the indicator (pages 113 to 115).
The lens gets fogged.	• Condensation is occurring.	→ Turn off the camera, leave the camera for about an hour and then try to use it again (page 108).
The camera gets hot if you use it for a long time.	—	→ This is not a malfunction.
The lens does not move when you turn off the camera. (DSC-P72 only)	• The batteries are discharged.	→ Replace them with charged batteries or use the AC Adaptor (not supplied) (pages 14, 16, 19).

Warnings and messages

The following messages appear on the LCD screen.

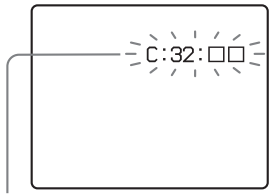
Message	Meaning/ Corrective Action
No Memory Stick	• Insert a “Memory Stick” (page 23).
System error	• Turn the power off and on again (page 20).
Memory Stick error	• The inserted “Memory Stick” cannot be used with your camera (page 109). • Insert the “Memory Stick” correctly (page 23). • The “Memory Stick” is damaged, or the terminal section of the “Memory Stick” is dirty.
Memory Stick type error	• The inserted “Memory Stick” cannot be used with your camera (page 109).
Format error	• The “Memory Stick” format failed. Format the “Memory Stick” again (page 44).
Memory Stick locked	• The write-protect switch on the “Memory Stick” is set to the LOCK position. Set it to the recording position (page 109).
No memory space	• The capacity of the “Memory Stick” is insufficient. You cannot record images. Delete unnecessary images (pages 40, 74).
No file in this folder	• No images have been recorded in this folder.
Folder error	• A folder with the same first three digits number already exists in the “Memory Stick.” (For example: 123MSDCF and 123ABCDE) Select other folders, or create a new folder.
Cannot create more folders	• The folder whose first three digits of the name is “999” exists in the “Memory Stick.” You cannot create any folders.
Cannot record	• You attempt to select the folder that is available only for viewing with your camera. Select other folders (page 47).
File error	• An error occurred while playing back the image.
File protect	• The image is protected against erasure. Release the protection (page 67).
Image size over	• You are playing back an image of a size that cannot be played back on your camera.
Can not divide	• The movie is not long enough to be divided. • The file is not a movie (MPEG movie).
Invalid operation	• You are playing back a file that was created on equipment other than your camera.
	• The battery level is low or zero. Charge the battery (page 14). Depending on the conditions of use or the type of battery, the indicator may flash even though there are still 5 to 10 minutes of remaining battery time left.

Message	Meaning/ Corrective Action
"hand"	• Camera shake may occur due to insufficient light. Use the flash, mount the camera on a tripod, or otherwise secure the camera in place.
Turn the power off and on again	• A problem with the lens caused an error.

Self-diagnosis display

– If a code starting with an alphabet letter appears

Your camera has a self-diagnosis display. This function displays the condition of the camera on the LCD screen using a combination of a letter and four numerical digits. If this occurs, check the following code chart and take the corresponding countermeasure. The last two digits (indicated by ☐☐)will differ depending on the state of the camera.



Self-diagnosis display

Code	Cause	Countermeasure
C:32: ☐☐	There is trouble with your camera's hardware.	Turn the power off and on again (page 20).
C:13: ☐☐	The camera cannot read or write data on the "Memory Stick."	Re-insert the "Memory Stick" several times.
	An unformatted "Memory Stick" is inserted.	Format the "Memory Stick" (page 44).
	The inserted "Memory Stick" cannot be used with your camera, or the data is damaged.	Insert a new "Memory Stick" (page 23).
E:61: ☐☐ **E:91:** ☐☐ **E:92:** ☐☐	A camera malfunction that you cannot reverse has occurred.	Press the RESET button (page 91) located inside the jack cover, then turn on the camera again.

If your camera is not still functioning well after trying the countermeasure a couple of times, the camera may be repaired. Contact your Sony dealer or local autholized Sony service facility and inform them of the 5-digit code.
Example: E:61:10

The number of images that can be saved/ shooting time

The number of images that can be saved and the shooting time are different, depending on the capacity of the “Memory Stick,” the image size, and the image quality. Refer to the following charts when you choose a “Memory Stick.”

- The number of images is listed in Fine (Standard) order.
- The values for the number of images that can be saved and the shooting time may vary, depending on the shooting conditions.
- For normal shooting times and numbers of images that can be saved, see page 25.
- When the remaining number of images recordable is more than 9999, “ >9999 ” is indicated.

E-mail (Units: images)

	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
3.1M	10 (18)	20 (36)	40 (73)	81 (146)	145 (255)	296 (518)	604 (1058)
2.8M (3:2)	10 (18)	20 (36)	40 (73)	81 (146)	145 (255)	296 (518)	604 (1058)
2.0M	16 (29)	32 (59)	65 (119)	131 (239)	230 (420)	468 (854)	956 (1743)
1.2M	24 (44)	49 (89)	98 (179)	197 (359)	340 (595)	691 (1210)	1411 (2470)
VGA	88 (194)	178 (392)	358 (788)	718 (1580)	1190 (2381)	2420 (4841)	4940 (9881)

Voice (Units: images)

	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
3.1M	9 (17)	19 (34)	39 (69)	79 (138)	142 (246)	290 (500)	592 (1022)
2.8M (3:2)	9 (17)	19 (34)	39 (69)	79 (138)	142 (246)	290 (500)	592 (1022)
2.0M	15 (26)	31 (54)	62 (109)	125 (219)	223 (396)	453 (806)	926 (1646)
1.2M	22 (38)	45 (78)	91 (157)	183 (316)	324 (549)	660 (1117)	1347 (2280)
VGA	69 (121)	140 (245)	281 (492)	564 (987)	1020 (1785)	2074 (3630)	4234 (7410)

Clip Motion (Units: images)

	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
Normal	88	178	358	718	1190	2420	4940
Mobile	486	982	1971	3951	3571	7261	14821

Normal: When 10 frames are shot
Mobile: When two frames are shot

MPEG movie (Units: seconds)

	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
640 (VGA)	42	87	176	354	641	1304	2663
160 (Mail)	673	1363	2740	5494	9935	20203	41239

Multi Burst (Units: images)

	16MB	32MB	64MB	128MB	MSX-256	MSX-512	MSX-1G
1.2M	24 (46)	50 (93)	101(187)	202 (376)	357 (649)	726 (1320)	1482 (2694)

Menu items

Menu items that can be changed differ depending on the position of the mode selector. The LCD screen shows only the items you can operate based on the current position of the mode selector. Factory settings are indicated with ■.

When the mode selector is set to 📷

Item	Setting	Description
📷 (Camera)	🌄/👤/ 🏔 / 🌆 / 🌙 / Program/ ■ Auto	Selects the camera mode (pages 27, 58).
(EV)*	+2.0EV / +1.7EV / +1.3EV / +1.0EV / +0.7EV / +0.3EV / ■0EV / –0.3EV / –0.7EV / –1.0EV / –1.3EV / –1.7EV / –2.0EV	Adjusts the exposure (page 50).
(Focus)*	∞ / 7.0m / 3.0m / 1.0m / 0.5m / Center AF / ■ Multi AF	Chooses the auto focus method (page 48), or sets the focus preset distance (page 49).
(Metering Mode)* (DSC-P72 only)	Spot / ■ Multi	Selects the metering mode to suit the shooting conditions and purpose. (page 51).
WB (White Bal)*	/ / / / ■Auto	Sets the white balance (page 52).
ISO*	400 / 200 / 100 / ■Auto	Selects the ISO sensitivity. When shooting under dark conditions or shooting a fast-moving subject, use a high-number setting. When recording high-quality images, use a low-number setting. (When the 📷 (Camera) is not set to [Auto] or [Program], this setting cannot be carried out.)
(P.Quality)*	■Fine / Standard	Records images with fine image quality mode. / Records images in the standard image quality mode (page 46).

Item	Setting	Description
Mode (REC Mode)	Voice E-Mail Burst 2 ■Normal	– Records an audio file (with a still image) in addition to the JPEG file (page 57). – Records a small-size (320×240) JPEG file in addition to the selected image size (page 56). – Records two images continuously (page 56). – Records an image using the normal recording mode.
± (Flash Level)*	High / ■Normal / Low	Selects the amount of flash light (page 53).
PFX (P.Effect)*	Solarize / B&W / Sepia /Neg.Art / ■Off	Sets the special effects for the image (page 60).

* When (Camera) is set to [Auto], these items are not displayed.

When the mode selector is set to (when [Moving Image] is set to [MPEG Movie] in the SET UP settings)

Item	Setting	Description
(EV)	+2.0EV / +1.7EV / +1.3EV / +1.0EV / +0.7EV / +0.3EV / ■0EV / –0.3EV / –0.7EV / –1.0EV / –1.3EV / –1.7EV / –2.0EV	Adjusts the exposure (page 50).
(Focus)	∞ / 7.0m / 3.0m / 1.0m / 0.5m / Center AF / ■ Multi AF	Chooses the auto focus method (page 48), or sets the focus preset distance (page 49).
(Metering Mode) (DSC-P72 only)	Spot / ■ Multi	Selects the metering mode to suit the shooting conditions and purpose. (page 51).
WB (White Bal)	/ / / / ■Auto	Sets the white balance (page 52).
PFX (P.Effect)	Solarize / B&W / Sepia /Neg.Art / ■Off	Sets the special effects for the image (page 60).

When the mode selector is set to 🎞 (when [Moving Image] is set to [Clip Motion] in the SET UP settings)

Item	Setting	Description
(EV)	+2.0EV / +1.7EV / +1.3EV / +1.0EV / +0.7EV / +0.3EV / ■0EV / –0.3EV / –0.7EV / –1.0EV / –1.3EV / –1.7EV / –2.0EV	Adjusts the exposure (page 50).
(Focus)	∞ / 7.0m / 3.0m / 1.0m / 0.5m / Center AF / ■ Multi AF	Chooses the auto focus method (page 48) or sets the focus preset distance (page 49).
(Metering Mode) (DSC-P72 only)	Spot / ■ Multi	Selects the metering mode to suit the shooting conditions and purpose. (page 51).
WB (White Bal)	/ / / / ■Auto	Sets the white balance (page 52).
± (Flash Level)	High / ■Normal / Low	Selects the amount of flash light (page 53).
PFX (P.Effect)	Solarize / B&W / Sepia /Neg.Art / ■Off	Sets the special effects for the image (page 60).

When the mode selector is set to 🎞 (when [Moving Image] is set to [Multi Burst] in the SET UP settings)

Item	Setting	Description
(EV)	+2.0EV / +1.7EV / +1.3EV / +1.0EV / +0.7EV / +0.3EV / ■0EV / –0.3EV / –0.7EV / –1.0EV / –1.3EV / –1.7EV / –2.0EV	Adjusts the exposure (page 50).
(Focus)	∞ / 7.0m / 3.0m / 1.0m / 0.5m / Center AF / ■ Multi AF	Chooses the auto focus method (page 48) or sets the focus preset distance (page 49).
(Metering Mode) (DSC-P72 only)	Spot / ■ Multi	Selects the metering mode to suit the shooting conditions and purpose. (page 51).
WB (White Bal)	/ / / / ■Auto	Sets the white balance (page 52).
(Interval)	1/7.5 / 1/15 / ■1/30 (NTSC) 1/6.3 / 1/12.5 / ■1/25 (PAL)	– In NTSC mode, choose the Multi Burst between-frame shutter interval. – In PAL mode, choose the Multi Burst between-frame shutter interval. • The choices of between-frame shutter interval differ depending on the setting of the [Video Out] item in the SET UP setting (page 107).

Item	Setting	Description
(P.Quality)	■Fine / Standard	Records images with fine image quality mode. / Records images in the standard image quality mode (page 46).
PFX (P.Effect)	Solarize / B&W / Sepia /Neg.Art / ■Off	Sets the special effects for the image (page 60).

When the mode selector is set to ▶

Item	Setting	Description
Folder	OK/Cancel	Select the folder that contains the images you want to play back (page 61).
Protect	—	Protects images against accidental erasure (page 67).
DPOF	—	Selects still images you want to attach/cancel the print (DPOF) mark (page 70).
Slide	Interval	– Sets the slide show interval. (For single-image screen only.) ■3 sec/ 5 sec/ 10 sec/ 30 sec/ 1 min
	Image	– Selects images from either folder or “Memory Stick.” ■Folder/All
	Repeat	– Repeats the slide show. ■On/Off
	Start	– Starts the slide show.
	Cancel	– Cancels the settings and execution of the slide show.
Resize	3.1M / 2.0M / 1.2M / VGA / Cancel	Changes the recorded image size (page 69). (For single-image screen only.)
Rotate	↶ (counter-clockwise) / ↷ (clockwise) / OK / Cancel	Rotates the still image (page 64). (For single-image screen only.)
Divide	OK / Cancel	Divides a movie (page 76). (For single-image screen only.)

SET UP items

Set the mode selector to SET UP. The SET UP screen appears.
Factory settings are indicated with ■.

(Camera)

Item	Setting	Description
Moving Image	■MPEG Movie / Clip Motion / Multi Burst	Selects the shooting mode (pages 54, 55, 72).
Smart Zoom (DSC-P72 only)	■On / Off	Selects whether to use the smart zoom (page 29).
Date/Time	Day&Time / Date / ■Off	Selects whether to insert the date and time into the image (page 35). When shooting movies, or images recorded in Clip Motion/Multi Burst modes, the date and time cannot be inserted in the image. Also, the date and time will not be displayed when shooting. The date and time will be displayed when the image is played back.
Red Eye Reduction	On / ■Off	Reduces the red-eye phenomenon when using a flash (page 33).
AF Illuminator	■Auto / Off	Selects whether to emit an AF assist light in the dark. Helps when it is hard to focus on the subject under dark lighting (page 33).

(Memory Stick Tool)

Item	Setting	Description
Format	OK / Cancel	Formats the “Memory Stick.” Note that formatting erases all data on a “Memory Stick,” including even protected images (page 44).
File Number	■ Series Reset	– Assigns numbers to files in sequence even if the “Memory Stick” is changed or the recording folder is changed. – Resets the file numbering and starts from 0001 each time the folder is changed. (When the recording folder contains a file, a number one higher than the largest number is assigned.)

Item	Setting	Description
Create REC. Folder	OK / Cancel	Creates a folder for recording images (page 47).
Change REC. Folder	OK / Cancel	Changes a folder for recording images (page 47).

(Setup 1)

Item	Setting	Description
Power Save	■ On / Off	Selects whether to use the Power Save mode (page 17). Displayed only when you are using the camera with the batteries.
LCD Brightness	Bright/ ■Normal/ Dark	Selects the LCD brightness. This has no effect on the recorded images.
LCD Backlight	Bright/Normal/ ■Dark	Selects the brightness of the LCD backlight. Selecting [Bright] makes the screen bright and easy to see when using the camera outdoors or in other bright locations, but also uses up the battery charge faster. Displayed only when you are using the camera with the batteries.
Beep	Shutter ■ On Off	– Turns on the shutter sound when you press the shutter button. – Turns on the beep/shutter sound when you press the control button/ press the shutter button. – Turns off the beep/shutter sound.
Language	—	Displays the menu items, warnings and messages in selected language.
Clock Set	OK / Cancel	Sets the date and time (pages 21, 45).

(Setup 2)

Item	Setting	Description
USB Connect	PTP/■Normal	Switches the USB mode (page 78).
Video Out	NTSC PAL	– Sets the video output signal to NTSC mode (e.g., Japan, USA). – Sets the video output signal to PAL mode (e.g., Europe).

Do not leave the camera in the following places

- In extremely hot place, such as in a car parked in the sun. The camera body may become deformed or this may cause a malfunction.
- Under direct sunlight or near a heater. The camera body may become deformed or this may cause a malfunction.
- On rocking vibration
- Near strong magnetic place
- On sandy or in dusty place
  Do not let sand get into the camera. Sand or dust may cause the camera to malfunction and sometimes this malfunction cannot be repaired.

Cleaning

Cleaning the LCD screen

Clean the screen surface with an LCD cleaning kit (not supplied) to remove fingerprints, dust, etc.

Cleaning the lens

Wipe the lens with a soft cloth to remove fingerprints, dust, etc.

Cleaning the camera surface

Clean the camera surface with a soft cloth slightly moistened with water, then wipe the surface with a dry cloth. Do not use the following as this may damage the finish or the casing.

- Thinner
- Benzine
- Alcohol
- Diposable cloth
- Volatile insecticide
- Contact with rubber or vinyl for a long time

Note on operating temperature

The camera is designed for use within a temperature range of 0°C to 40°C (32°F to 104°F). Shooting in extremely cold or hot locations that exceed this range is not recommended.

On moisture condensation

If the camera is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside or outside the camera. This moisture condensation may cause a malfunction of the camera.

Moisture condensation occurs easily when:

- The camera is brought from a cold location such as a ski slope into a warmly heated room.
- The camera is taken from an air-conditioned room or car interior to the hot outdoors, etc.

To prevent moisture condensation

When bringing the camera from a cold place to a warm place, seal the camera in a plastic bag and leave it in the new location for about an hour. Remove the plastic bag when the camera has adapted to the new temperature.

If moisture condensation occurs

Turn off the camera and wait about an hour for the moisture to evaporate. Note that if you attempt to shoot with moisture remaining inside the lens, you will be unable to record clear images.

The internal rechargeable button battery

This camera has an internal rechargeable button battery for maintaining the date and time and other settings regardless of whether the power is on or off.
This rechargeable button battery is continually charged as long as you are using the camera. However, if you use the camera for only short periods it discharges gradually, and if you do not use the camera at all for about one month it becomes completely discharged. In this case, be sure to charge this rechargeable button battery before using the camera.
Note that even if this rechargeable button battery is not charged, you can still use the camera as long as you do not record the date and time.

How to charge

Connect the camera to a wall outlet (wall socket) using the AC Adaptor (not supplied), or install charged batteries, and leave the camera for 24 hours or more with the power turned off.

The "Memory Stick"

"Memory Stick" is a new compact, portable and versatile IC recording medium with a data capacity that exceeds the capacity of a floppy disk.
You can use the "Memory Stick" as an external recording media that can be attached or removed as well as exchanging data between the units.

There are two types of "Memory Stick": an ordinary "Memory Stick" and a "MagicGate Memory Stick" that are equipped with the MagicGate copyright protection technology. You can use both types of "Memory Stick" with your camera. However, because your camera does not support the MagicGate standards, data recorded with your camera is not subject to MagicGate***** copyright protection.
You can also use the "Memory Stick Duo" and "Memory Stick PRO" with the camera.

***** MagicGate is copyright protection technology that uses encryption technology.

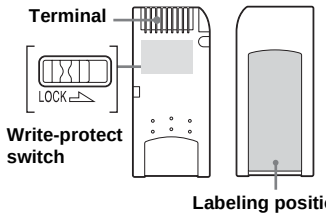
- The "Memory Stick" formatted with a computer is not guaranteed to operate with this camera.

"Memory Stick"	Recording/ Playback
Memory Stick (Memory Stick Duo)	○
MagicGate Memory Stick (MagicGate Memory Stick Duo)	○**
Memory Stick PRO	○**

******The camera cannot record or play back the data needed by the MagicGate function.
We cannot ensure all of the functions of each "Memory Stick."

Notes on use of the "Memory Stick" (supplied)

- You cannot record, edit, or delete images when the write-protect switch is set to LOCK. The position or the shape of the write-protect switch may differ depending on the "Memory Stick" you use.



- Data may be damaged in the following cases:
  - Removing the "Memory Stick" or turning off the camera while reading or writing data.
  - Using the camera in a location subject to the effects of static electricity or noise.
- We recommend you back up any important data.

- Do not attach any other material than the supplied label on the labeling position.
- When you attach the supplied label, be sure to attach it to the labeling position. Be careful that the label does not stick out.
- When you carry or store the “Memory Stick,” put it in the case supplied with it.
- Do not touch the terminals of a “Memory Stick” with your hand or a metal object.
- Do not strike, bend or drop a “Memory Stick.”
- Do not disassemble or modify a “Memory Stick.”
- Do not expose the “Memory Stick” to water.
- Avoid using or storing the “Memory Stick” in the following places:
  - In a car parked in the sun, or at a high temperature.
  - Under direct sunlight.
  - In a humid place or near corrosive material.

Notes on use of the “Memory Stick Duo” (not supplied)

- Be sure to insert the “Memory Stick Duo” into the “Memory Stick Duo” Adaptor when using the “Memory Stick Duo” with the camera.
- Verify that you are inserting the “Memory Stick Duo” in the proper direction when inserting it into the “Memory Stick Duo” Adaptor.
- Verify that you are inserting the “Memory Stick Duo” Adaptor in the proper direction when inserting it into the camera. Inserting it in the wrong direction may cause a malfunction.
- Do not insert a “Memory Stick Duo” that is not inserted into a “Memory Stick Duo” Adaptor into a “Memory Stick”-compatible unit. This may cause a malfunction of the unit.

Note on use of the “Memory Stick PRO” (not supplied)

A “Memory Stick PRO” with a capacity of up to 1 GB can be used with this camera.

The nickel-metal hydride batteries

Effective use of the battery

- Battery performance decreases in low-temperature surroundings, and the battery life is shortened under such circumstances. To use the battery longer, we recommend you keep the battery stored in the supplied battery case, in a pocket close to your body to warm it, and insert it in your camera just before you start shooting.
- If you shoot a lot using the zoom and flash, the battery power will be used up faster.
- We recommend having spare batteries handy for two or three times the expected shooting time, and try test shooting before the actually using the camera.
- Do not expose the battery to water. The battery is not water-resistant.

Battery life

- The battery life is limited. Battery capacity decreases little by little as you use it more and more, and as time passes. When the battery operating time seems to have been considerably shortened, a probable cause is that the battery has reached the end of its life.
- The battery life varies depending on storage, operating conditions, and environment, and is different for each battery.

The battery charger

- Do not charge any other batteries except the Sony nickel hydride battery using the supplied battery charger. If you charge other types of battery (manganese, alkaline, lithium, ni-cd batteries, etc.), this may cause leakage, explosion, or overheating of the battery, and personal scald or injury may be caused.
- Do not recharge a fully charged nickel hydride battery. This may cause leakage, explosion, or overheating of the battery.
- When charging a high capacity battery other than the supplied battery using the supplied battery charger, the full capacity of the battery may not be available.
- When the CHARGE lamp flashes, the battery may cause a malfunction if an unspecified battery was inserted. First, verify that the battery is specified for use with the charger. If the battery is specified for use with the charger, remove all the batteries from the battery charger, insert other batteries, such as new ones, and check that the battery charger works properly. When the battery charger works properly, the batteries may be the cause of the malfunction.

Specifications

■ Camera

[System]

Image device 6.67 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera
Approx. 3 340 000 pixels

Effective pixels number of camera
Approx. 3 210 000 pixels

Lens **DSC-P72**
3× zoom lens
f=6.0 to 18.0 mm
(35 mm camera conversion: 39 to 117mm ($1\ ^{9}/_{16}$ to $4\ ^{5}/_{8}$ inches))
F2.8-5.6
DSC-P32
Single focal lens
f=5.0 mm
(35 mm camera conversion: 33 mm ($1\ ^{5}/_{16}$ inches))
F2.8

Exposure control
Automatic, Program, Twilight, Twilight portrait, Landscape, Snow, Beach

White balance Automatic, Daylight, Cloudy, Fluorescent, Incandescent

File format (DCF compliant)
Still images: Exif Ver. 2.2, JPEG compliant, GIF (for Clip Motion), DPOF compatible
Audio with still image: MPEG1 compliant (Monaural)
Movies: MPEG1 compliant (Monaural)

Recording media
“Memory Stick”

Flash
Recommended distance
DSC-P72
0.5 to 3.8 m (19 3/4 inches to 12 feet 5 19/32 inches) (W)/ 0.5 to 2.5 m (19 3/4 inches to 8 feet 2 7/16 inches)
DSC-P32
0.5 to 3.8 m (19 3/4 inches to 12 feet 5 19/32 inches)
(when ISO sensitivity is set to Auto)

[Output connectors]

A/V OUT (MONO) jack (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance 2.2 kΩ

USB jack
mini-B

[LCD screen]

LCD panel used
DSC-P72
3.8 cm (1.5 type) TFT drive
DSC-P32
4.0 cm (1.6 type) TFT drive

Total number of dots
DSC-P72
123 200 (560×220) dots
DSC-P32
61 600 (280×220) dots

[Power, general]

Power
AA nickel hydride batteries (2)
2.4 V
AC-LS5 AC Adaptor (not supplied), 4.2 V

Power consumption (when recording)
1.7W

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions
DSC-P72
119.5 × 57.7 × 32.6 mm (4 3/4 × 2 3/8 × 1 5/16 inches)
DSC-P32
101.3 × 57.7 × 32.6 mm (4 × 2 3/8 × 1 5/16 inches)
(W/H/D, protruding portions not included)

Mass
DSC-P72
Approx. 259 g (9.1 oz) (two batteries, “Memory Stick” and wrist strap included)
DSC-P32
Approx. 217 g (7.7 oz) (two batteries, “Memory Stick” and wrist strap included)

Microphone
Electret condenser microphone

Speaker
Dynamic speaker

■ BC-CS2A/CS2B Ni-MH battery charger

Power requirements
AC 100 to 240V 50/60Hz
3 W

Output voltage
AA : DC 1.4 V 400 mA × 2
AAA : DC 1.4 V 160 mA × 2

Operating temperature range
0° to +40°C (32° to +104°F)

Dimensions
71 × 30 × 91 mm (2 7/8 × 1 3/16 × 3 5/8 inches) (W/H/D)

Mass
Approx. 90 g (3 oz)

■ AC-LS5 AC Adaptor (not supplied)

Power requirements
AC 100 to 240 V, 50/60 Hz
11 W 0.16 to 0.09 A

Rated output voltage
DC 4.2 V, 1.5 A

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions
48 × 29 × 81 mm (1 15/16 × 1 3/16 × 3 1/4 inches) (W/H/D, protruding parts not included)

Mass
Approx. 180 g (6 oz) (adaptor only)

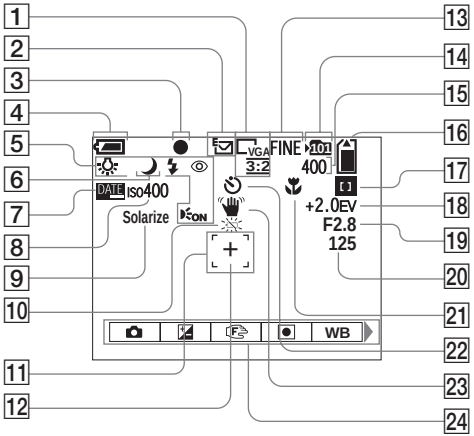
Accessories

- HR6 (size AA) Ni-MH batteries (2)
- Battery case
- BC-CS2A/CS2B Ni-MH Battery charger (1)
- Power cord (mains lead) (1)
- USB cable (1)
- A/V connecting cable (1)
- Wrist strap (1)
- “Memory Stick” (16MB) (1)
- CD-ROM (USB driver: SPVD-010) (1)
- Operating Instructions (1)

Design and specifications are subject to change without notice.

The LCD screen

For shooting still images

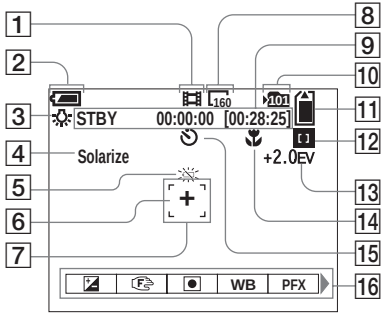


1 **Image size indicator** (24, 25)
2 **Recording mode indicator** (54–57)
3 **AE/AF lock indicator** (26, 49)
4 **Battery remaining indicator** (17)
5 **Flash mode** (32)**/ Red-eye reduction** (33)**/ White balance indicator** (52)**/ AF illuminator indicator** (33)
6 **Camera mode indicator** (27, 58)
7 **Date/time indicator** (35)
8 **ISO sensitivity** (102)
9 **Picture effect indicator** (60)
10 **Low battery warning** (98)
11 **AF range finder** (48)
12 **Spot metering cross hair** (51)
13 **Image quality indicator** (25, 46)
14 **Recording folder indicator** (46)
15 **Remaining number of recordable images indicator** (25)**/ Self-diagnosis display** (100)
16 **Remaining "Memory Stick" capacity indicator**
17 **Center AF [ ]/Multi AF [ ] indicator** (48)**/ Focus preset value** (49)
18 **EV adjustment indicator** (50)
19 **Iris value indicator**
20 **Shutter speed indicator**
21 **Macro (DSC-P72)** (30)
22 **Self-timer indicator** (31)
23 **Vibration warning indicator** (99)
24 **Menu/Guide menu** (45)

- Pressing the MENU button switches the menu/guide menu on/off.
- [●] (Metering Mode) is not displayed on the menu of the DSC-P32.

The page numbers in parentheses indicate the location of additional important information.

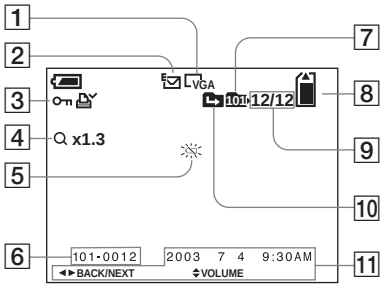
For shooting movies



1 **Recording mode indicator** (72)
2 **Battery remaining indicator** (17)
3 **White balance indicator** (52)
4 **Picture effect indicator** (60)
5 **Low battery warning** (98)
6 **Spot metering cross hair** (51)
7 **AF range finder** (48)
8 **Image size indicator** (72)
9 **Recording time (Maximum recordable time) indicator** (101)**/ Self-diagnosis display** (100)
10 **Recording folder indicator** (46)
11 **Remaining "Memory Stick" capacity indicator**
12 **Center AF [ ]/Multi AF [ ] indicator** (48)**/ Focus preset value** (49)
13 **EV adjustment indicator** (50)
14 **Macro (DSC-P72)** (30)
15 **Self-timer indicator** (31)
16 **Menu/Guide menu** (45)

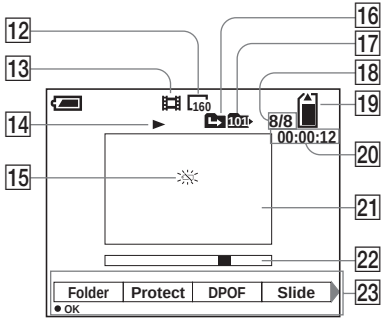
- Pressing the MENU button switches the menu/guide menu on/off.
- [ ] (Metering Mode) is not displayed on the menu of the DSC-P32.

For still image playback



1 **Image size indicator** (24, 25)
2 **Recording mode indicator** (54–57)
3 **Volume indicator** (57)**/Protect mark indicator** (67)**/Print (DPOF) mark indicator** (70)
4 **Zoom indicator** (62)**/Jog playback indicator** (65)
5 **Low battery warning** (98)
6 **Folder-file number** (87)
7 **Playback folder indicator** (61)
8 **Remaining "Memory Stick" capacity indicator**
9 **Number of images recorded in the playback folder/Image number**
10 **Change folder indicator** (61)
11 **Recording date/time of the image** (21)**/Menu/Guide menu** (45)

For movie playback



12 **Image size indicator** (73)
13 **Recording mode indicator** (73)
14 **Playback indicator** (73)**/Volume indicator** (73)
15 **Low battery warning** (98)
16 **Change folder indicator** (61)
17 **Playback folder indicator** (61)
18 **Image number/Number of images recorded in the playback folder**
19 **Remaining "Memory Stick" capacity indicator**
20 **Counter** (73)
21 **Playback screen** (73)
22 **Playback bar** (73)
23 **Menu/Guide menu** (45)

The page numbers in parentheses indicate the location of additional important information.

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3 0 8 0 8 7 7 1 2

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DSC-P32

SERVICE MANUAL

LEVEL 2

Ver 1.0 2003. 02

Revision History

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL 1 (987622841.pdf).
- Reference No. search on printed wiring boards is available.

On the SY-84 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the SY-84 board.

Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the SY-84 board are not shown.

The following pages are not shown.

Schematic diagram ..... Pages 4-7 to 4-26
Printed wiring board ..... Pages 4-39 to 4-42
Waveforms ..... Pages 4-45 to 4-46
Mounted parts location ..... Page 4-48
Electrical parts list ..... Pages 5-7 to 5-12

DIGITAL STILL CAMERA

SONY®

DSC-P32

COVER

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

MEMORY STICK

SPECIFICATIONS

■ Camera

[System]

Image device 6.67 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera
Approx. 3 340 000 pixels

Effective pixels number of camera
Approx. 3 210 000 pixels

Lens Single focal lens
f=5.0 mm
(35 mm camera conversion: 33 mm ($1\ ^{5}/_{16}$ inches))
F2.8

Exposure control
Automatic, Program, Twilight, Twilight portrait, Landscape, Snow, Beach

White balance Automatic, Daylight, Cloudy, Fluorescent, Incandescent

File format (DCF compliant)
Still images: Exif Ver. 2.2, JPEG compliant, GIF (for Clip Motion), DPOF compatible
Audio with still image: MPEG1 compliant (Monaural)
Movies: MPEG1 compliant (Monaural)

Recording media
"Memory Stick"

Flash Recommended distance
0.5 to 3.8 m ($19\ ^{3}/_{4}$ inches to 12 feet $5\ ^{19}/_{32}$ inches)
(when ISO sensitivity is set to Auto)

[Output connectors]

A/V OUT (MONO) jack (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance 2.2 kΩ

USB jack mini-B

[LCD screen]

LCD panel used
4.0 cm (1.6 type) TFT drive

Total number of dots
61 600 (280×220) dots

[Power, general]

Power AA nickel hydride batteries (2)
2.4 V
AC-LS5 AC Adaptor (not supplied), 4.2 V

Power consumption (when recording)
1.7W

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $101.3 \times 57.7 \times 32.6$ mm ($4 \times 2\ ^{3}/_{8} \times 1\ ^{5}/_{16}$ inches)
(W/H/D, protruding portions not included)

Mass Approx. 217 g (7.7 oz) (two batteries, "Memory Stick" and wrist strap included)

Microphone Electret condenser microphone

Speaker Dynamic speaker

■ BC-CS2A/CS2B Ni-MH battery charger

Power requirements
AC 100 to 240V 50/60Hz
3 W

Output voltage
AA : DC 1.4 V 400 mA × 2
AAA : DC 1.4 V 160 mA × 2

Operating temperature range
0° to +40°C (32° to +104°F)

Dimensions $71 \times 30 \times 91$ mm ($2\ ^{7}/_{8} \times 1\ ^{3}/_{16} \times 3\ ^{5}/_{8}$ inches) (W/H/D)

Mass Approx. 90 g (3 oz)

■ AC-LS5 AC Adaptor (not supplied)

Power requirements
AC 100 to 240 V, 50/60 Hz
11 W 0.16 to 0.09 A

Rated output voltage
DC 4.2 V, 1.5 A

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $48 \times 29 \times 81$ mm ($1\ ^{15}/_{16} \times 1\ ^{3}/_{16}$ $3\ ^{1}/_{4}$ inches) (W/H/D, protruding parts not included)

Mass Approx. 180 g (6 oz)
(adaptor only)

Accessories

HR6 (size AA) Ni-MH batteries (2)
Battery case
BC-CS2A/CS2B Ni-MH Battery charger (1)
Power cord (mains lead) (1)
USB cable (1)
A/V connecting cable (1)
Wrist strap (1)
"Memory Stick" (16MB) (1)
CD-ROM (USB driver: SPVD-010) (1)
Operating Instructions (1)

Design and specifications are subject to change without notice.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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Pages 4-45 to 4-46 are not shown.

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Mounted parts location of the SY-84 board is not shown.
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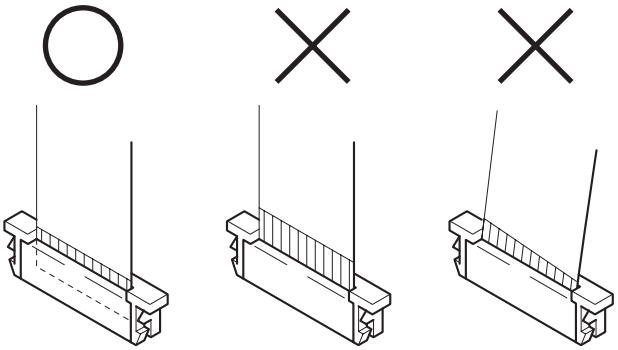
Parts list of the SY-84 board are not shown.
Pages from 5-7 to 5-12 are not shown.

COVER

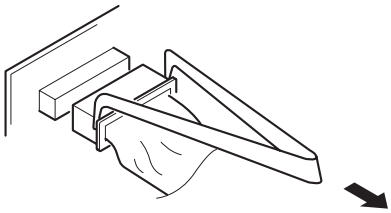
SECTION 1
SERVICE NOTE

• NOTE FOR REPAIR

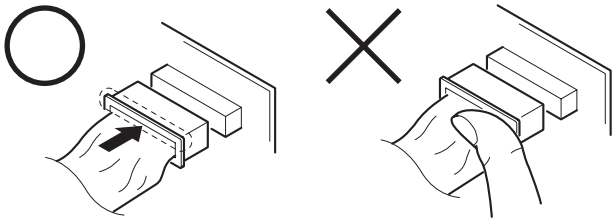
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



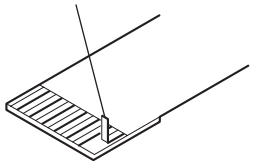
When remove a connector, don't pull at wire of connector.
Be in danger of the snapping of a wire.



When installing a connector, don't press down at wire of connector.
Be in danger of the snapping of a wire.



Cut and remove the part of gilt which comes off at the point. (Take care that there are some pieces of gilt left inside)

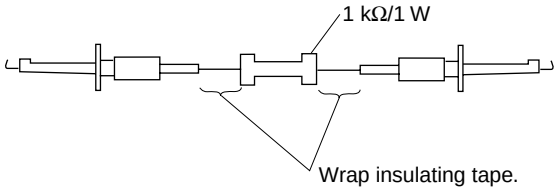


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the capacitor is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the DSC-P32 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

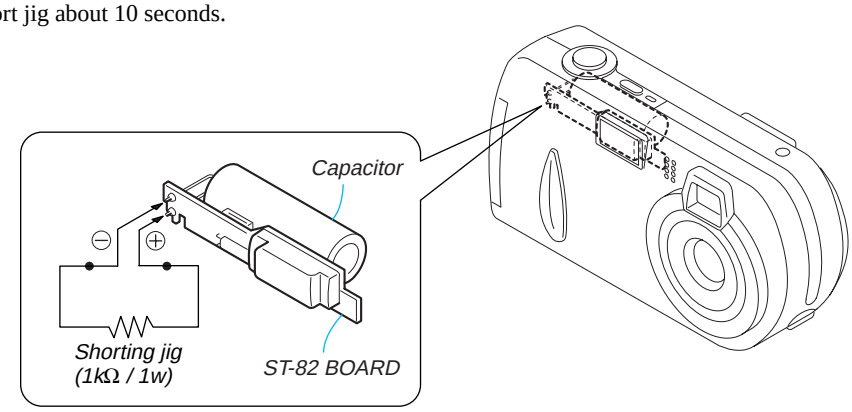
Preparing the Short Jig

To preparing the short jig. a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11)
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

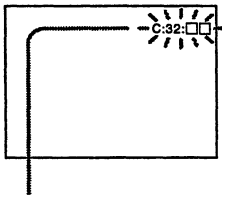
Short circuits between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

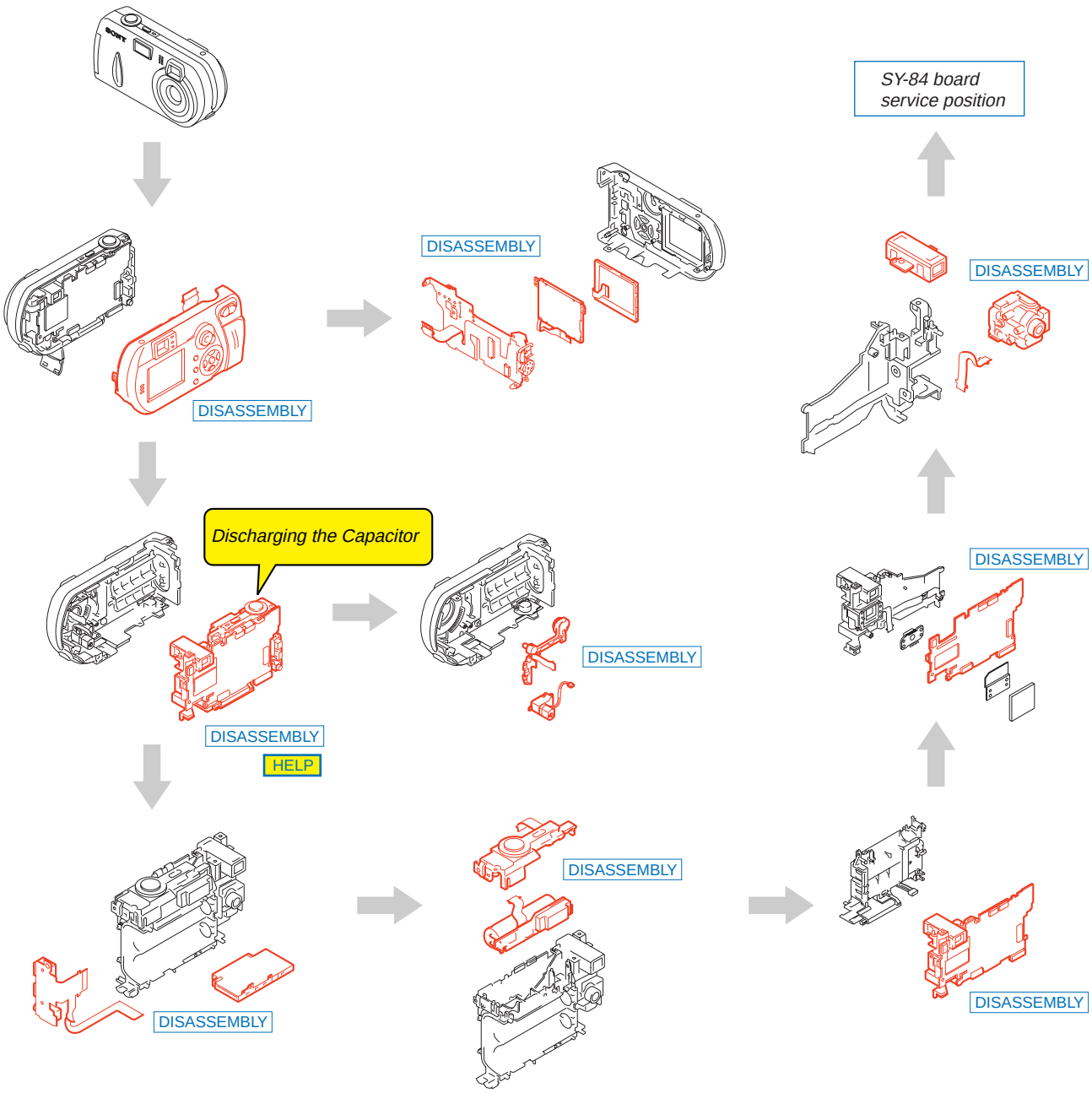
- C: □□: □□
  The contents which can be handled by customer, are displayed.
- E: □□: □□
  The contents which can be handled by engineer, are displayed.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Turn off the main power then back on.	Trouble with hardware.	SYSTEM ERROR
C:13:01	Replace the memory stick. Format the memory stick with the DSC-P32.	• The type of memory stick that cannot be used by this machine, is inserted. • Data is damaged. • Unformatted memory stick is inserted.	MS ERROR
E:91:01	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	Flash LED Flash display Flashing at 3.2 Hz
E:61:00 *1	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10 *1			

Note : The error code is cleared if the battery is removed, except defective flash unit.
*1: The error display is given in two ways.

SECTION 2
DISASSEMBLY

The following flow chart shows the disassembly procedure.



PROCEDURE OF REMOVING SY-84 BOARD

① 2-1. CABINET (REAR) BLOCK ASSEMBLY ..... (page 2-2)
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CONTROL SWITCH BLOCK (SW-390)
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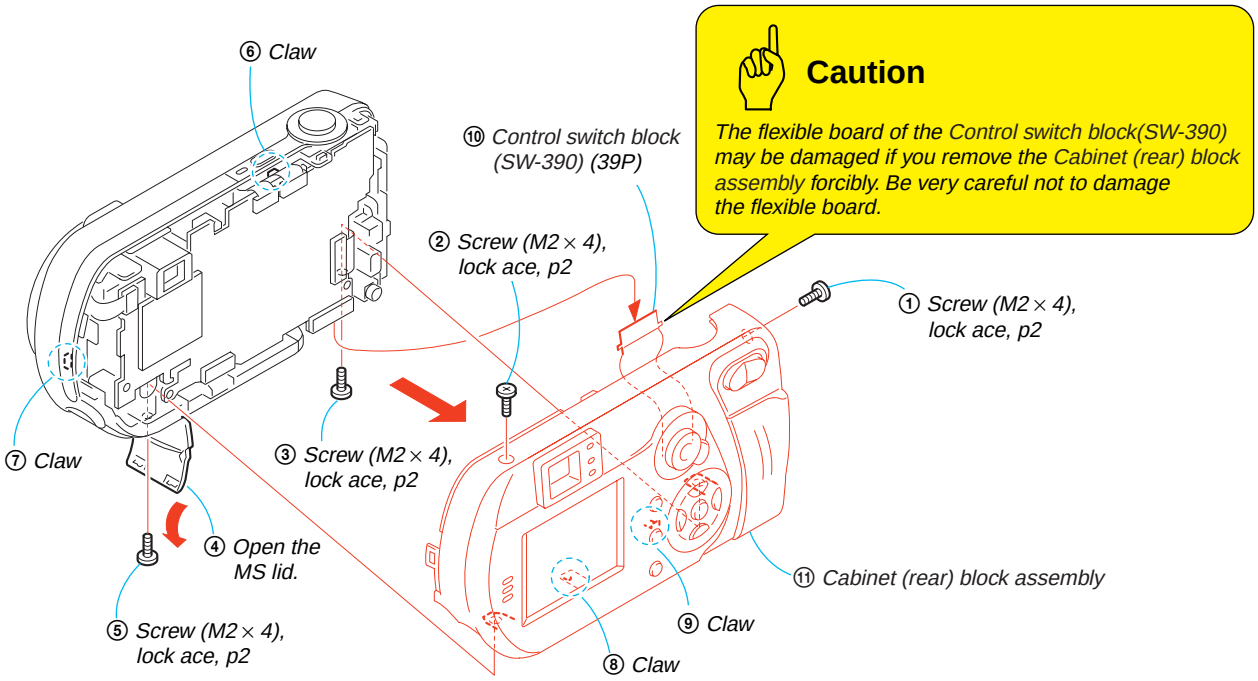
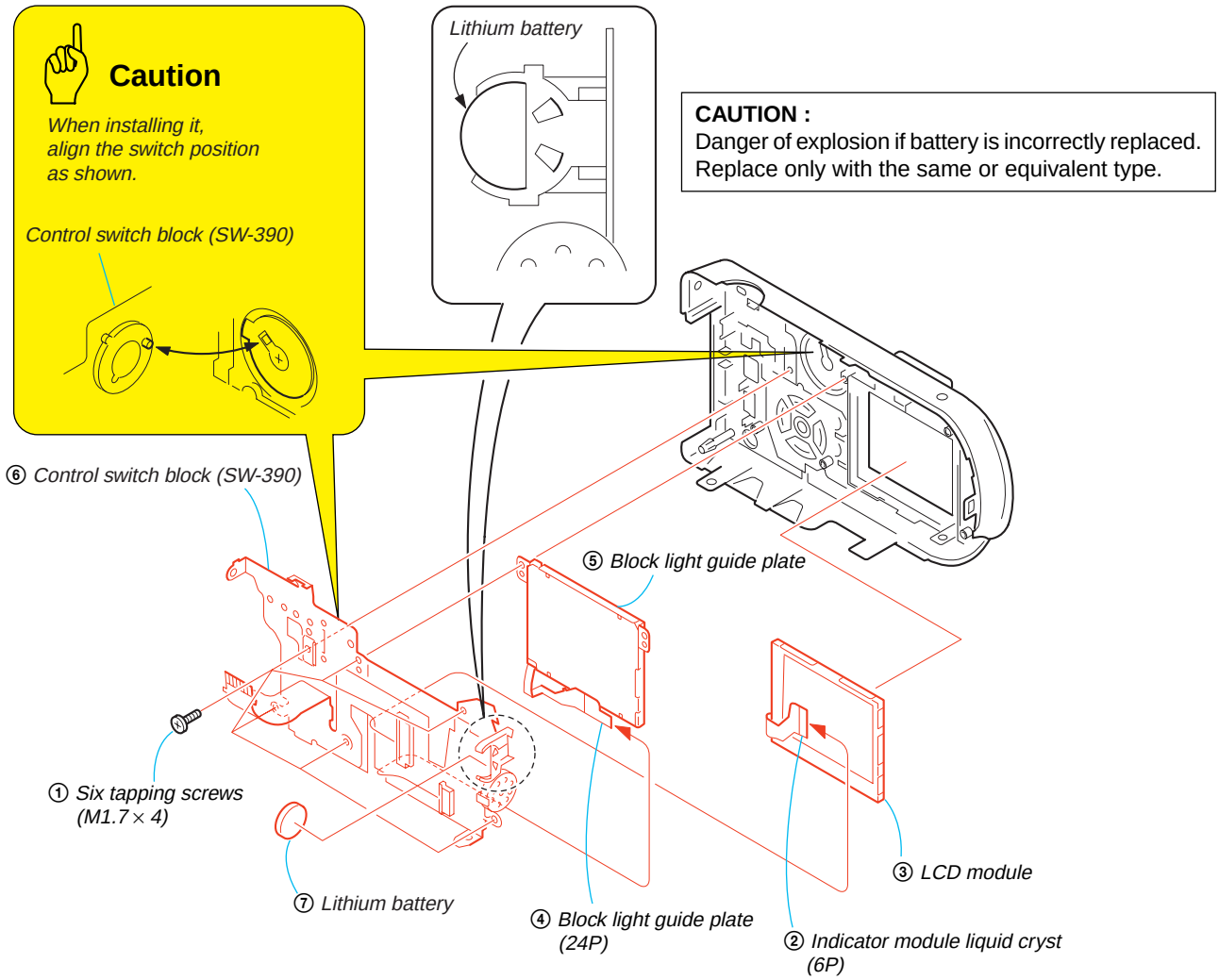
⑦ 2-7. LENS FRAME BLOCK ASSEMBLY ..... (page 2-5)
⑧ 2-8. SY-84 BOARD ..... (page 2-6)

NOTE: Follow the disassembly procedure in the numerical order given.

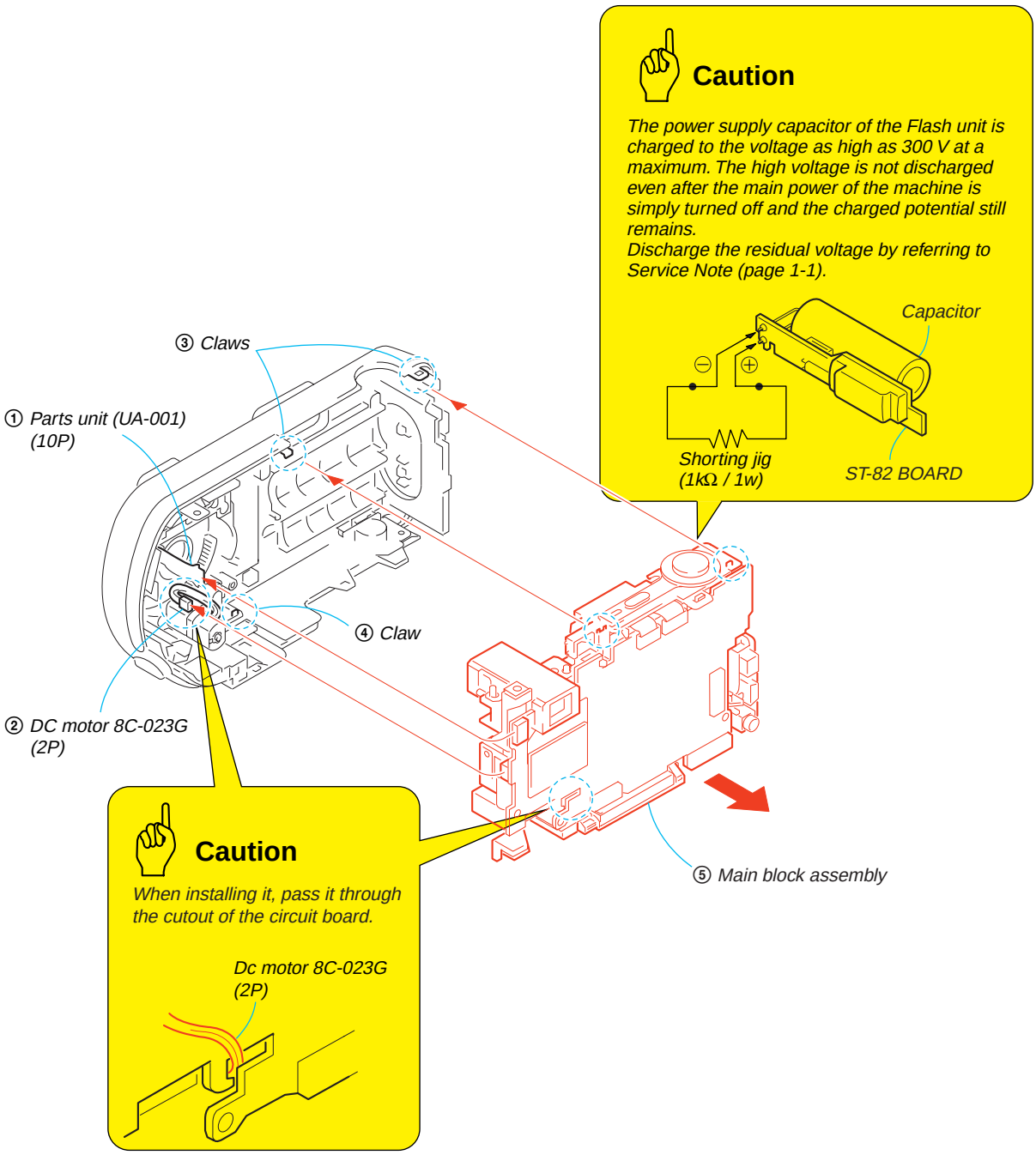
2-1. CABINET (REAR) BLOCK ASSEMBLY


⑥ Claw
⑩ Control switch block (SW-390) (39P)
② Screw (M2 × 4), lock ace, p2
① Screw (M2 × 4), lock ace, p2
⑦ Claw
③ Screw (M2 × 4), lock ace, p2
④ Open the MS lid.
⑤ Screw (M2 × 4), lock ace, p2
⑪ Cabinet (rear) block assembly
⑨ Claw
⑧ Claw
Caution
The flexible board of the Control switch block(SW-390) may be damaged if you remove the Cabinet (rear) block assembly forcibly. Be very careful not to damage the flexible board.

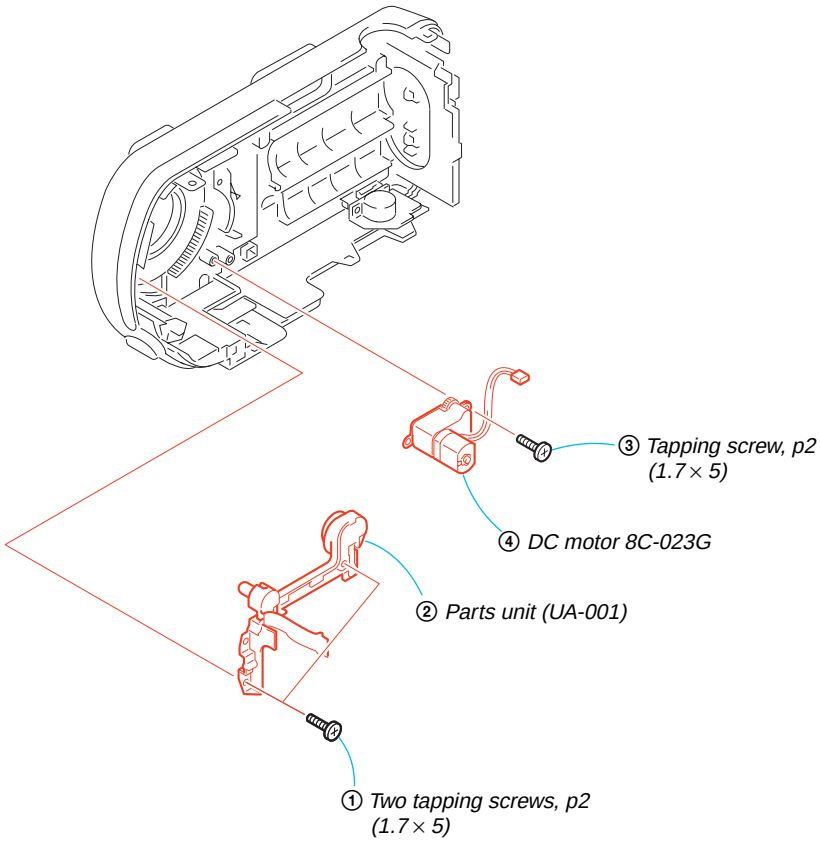
2-2. LCD MODULE, CONTROL SWITCH BLOCK (SW-390), BLOCK LIGHT GUIDE PLATE, LITHIUM BATTERY


Caution
When installing it, align the switch position as shown.
Control switch block (SW-390)
Lithium battery
CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.
⑥ Control switch block (SW-390)
⑤ Block light guide plate
① Six tapping screws (M1.7 × 4)
⑦ Lithium battery
④ Block light guide plate (24P)
③ LCD module
② Indicator module liquid cryst (6P)

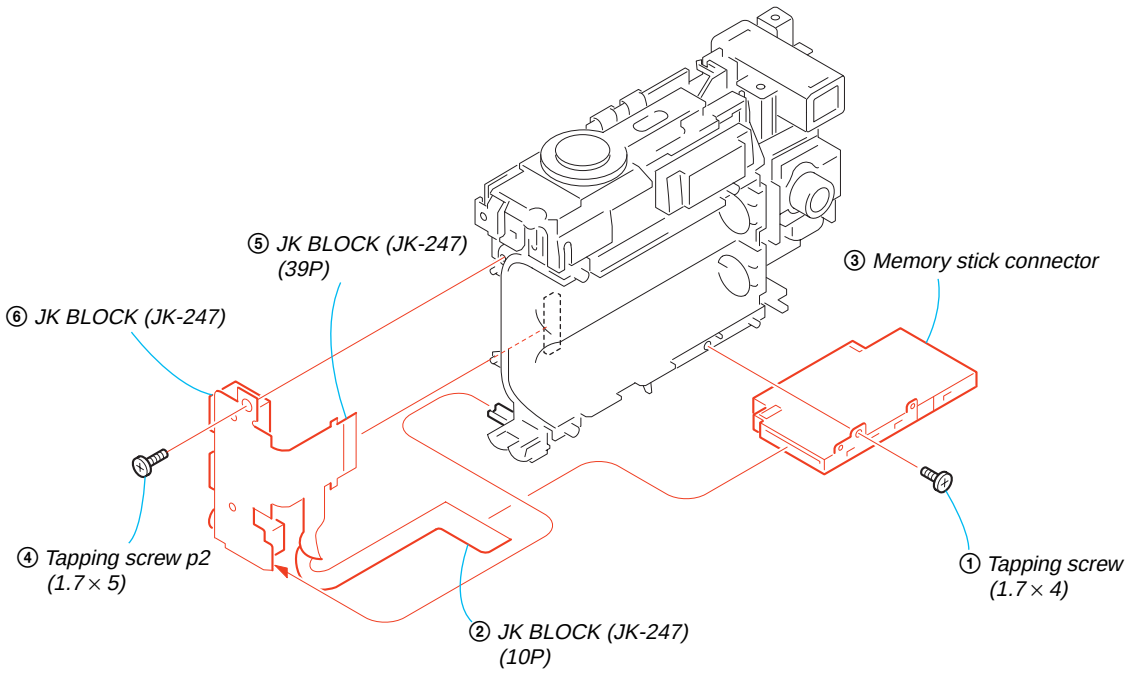
2-3. MAIN BLOCK ASSEMBLY


Caution
The power supply capacitor of the Flash unit is charged to the voltage as high as 300 V at a maximum. The high voltage is not discharged even after the main power of the machine is simply turned off and the charged potential still remains.
Discharge the residual voltage by referring to Service Note (page 1-1).
Capacitor
Shorting jig
(1kΩ / 1w)
ST-82 BOARD
③ Claws
① Parts unit (UA-001)
(10P)
④ Claw
② DC motor 8C-023G
(2P)
⑤ Main block assembly
Caution
When installing it, pass it through the cutout of the circuit board.
Dc motor 8C-023G
(2P)

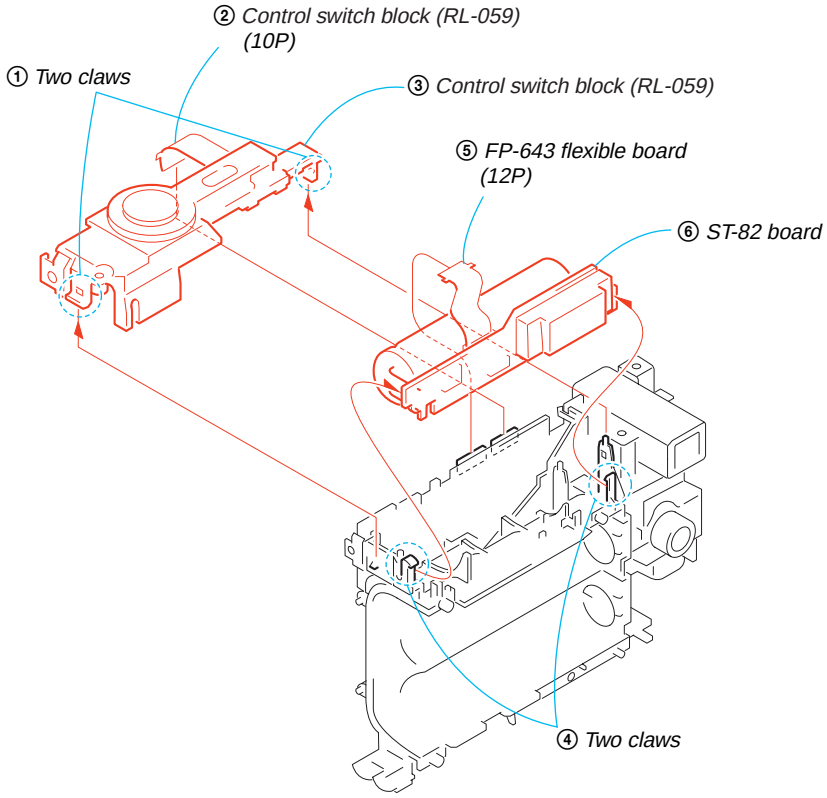
2-4. PARTS UNIT (UA-001), DC MOTOR 8C-023G



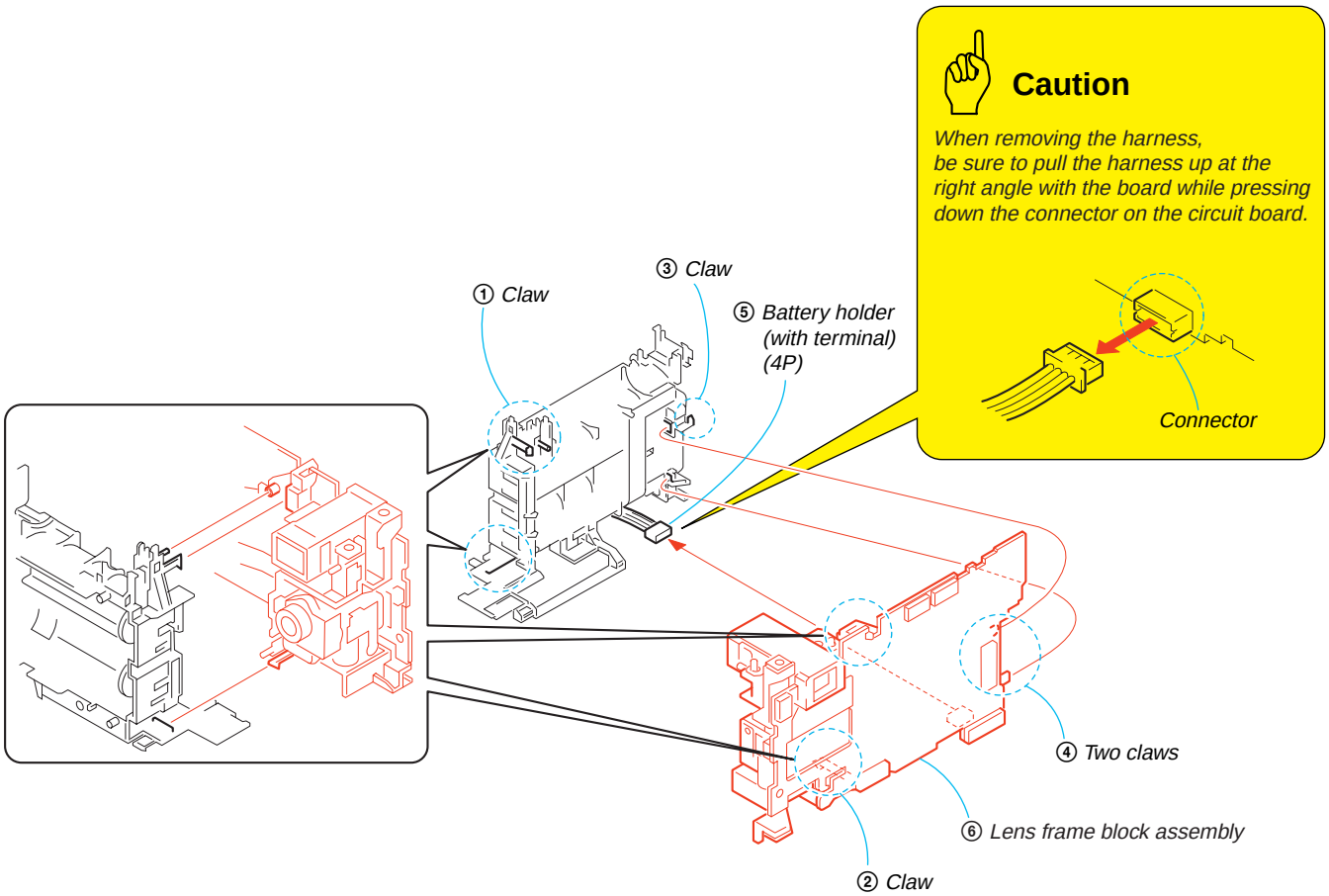
2-5. MEMORY STICK CONNECTOR, JK BLOCK (JK-247)



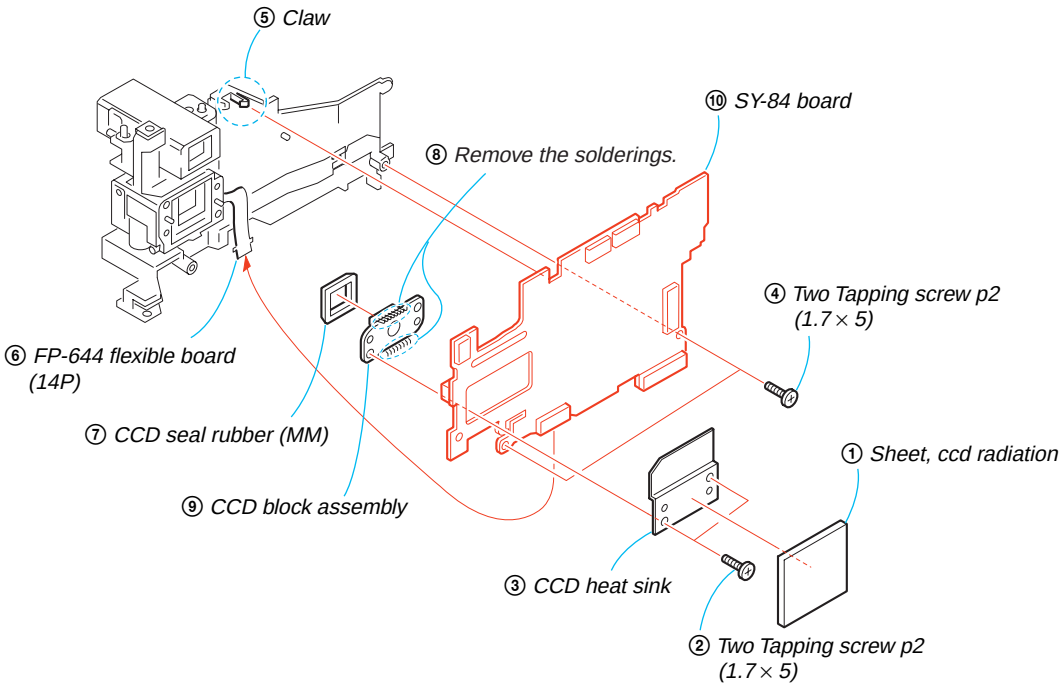
2-6. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD


② Control switch block (RL-059) (10P)
① Two claws
③ Control switch block (RL-059)
⑤ FP-643 flexible board (12P)
⑥ ST-82 board
④ Two claws

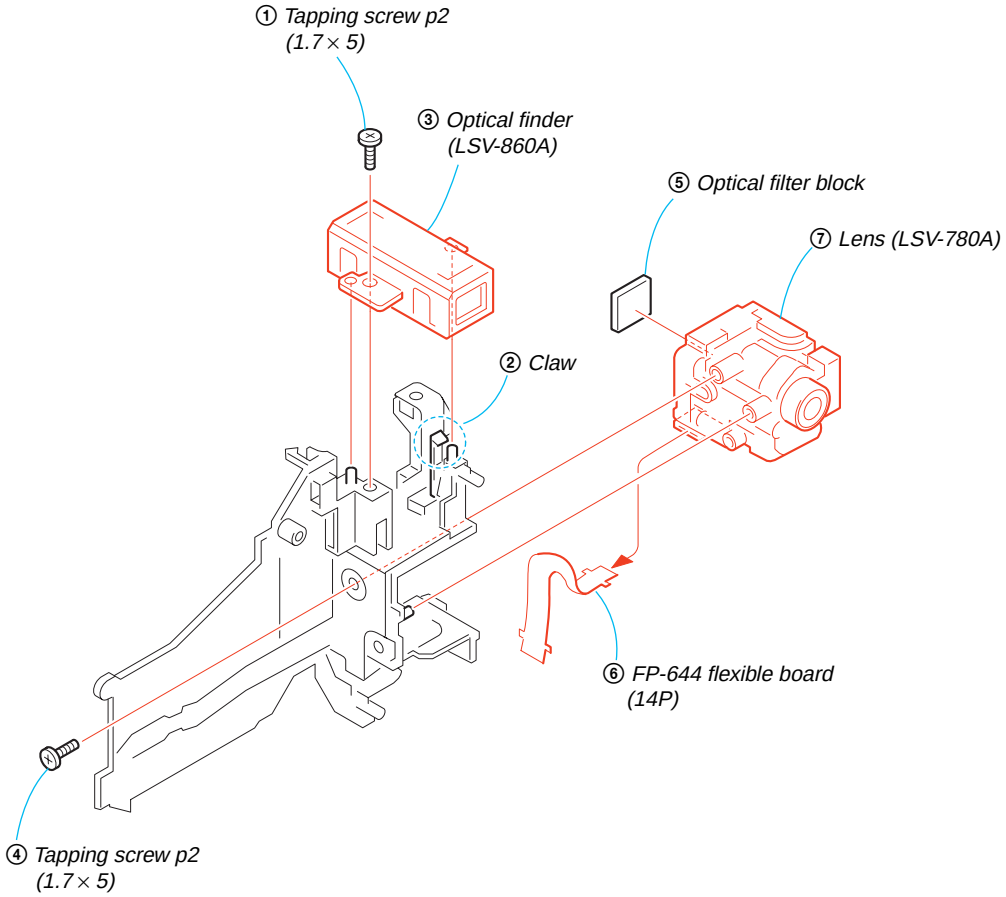
2-7. LENS FRAME BLOCK ASSEMBLY


Caution
When removing the harness, be sure to pull the harness up at the right angle with the board while pressing down the connector on the circuit board.
Connector
① Claw
③ Claw
⑤ Battery holder (with terminal) (4P)
④ Two claws
⑥ Lens frame block assembly
② Claw

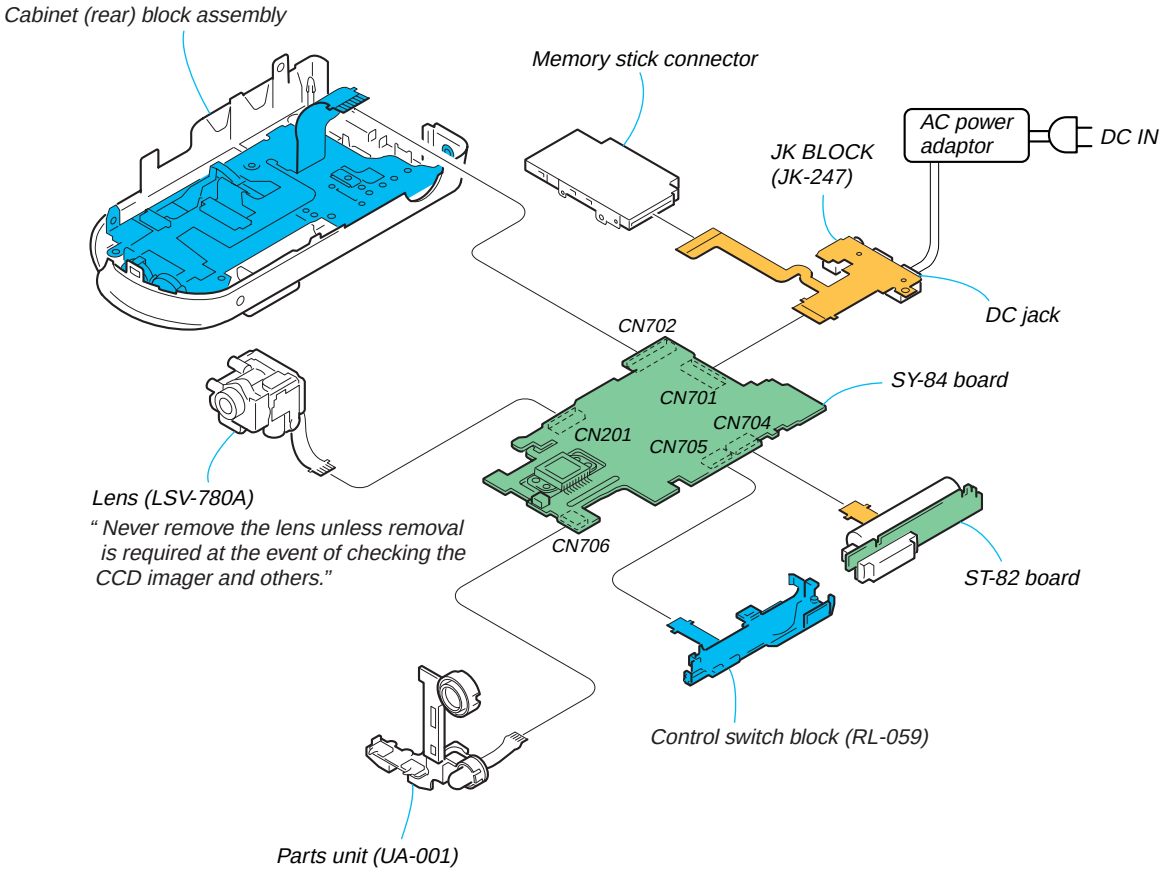
2-8. SY-84 BOARD



2-9. OPTICAL FINDER (LSV-860A), FP-644 FLEXIBLE BOARD, LENS (LSV-780A)



[SERVICE POSITION (SY-84 BOARD)]



PROCEDURE OF REMOVING SY-84 BOARD

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⑤ 2-5. MEMORY STICK CONNECTOR, JK BLOCK (JK-247)..... (page 2-4)
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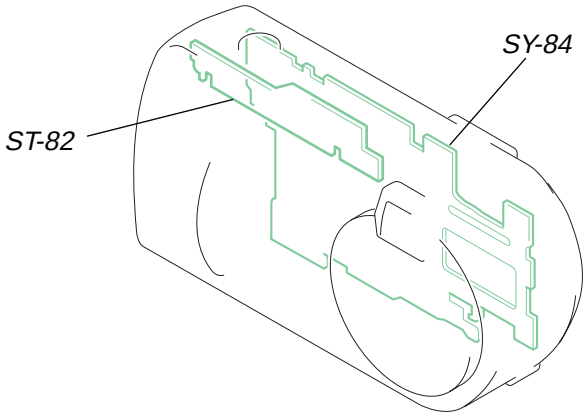
⑦ 2-7. LENS FRAME BLOCK ASSEMBLY ..... (page 2-5)
⑧ 2-8. SY-84 BOARD ..... (page 2-6)

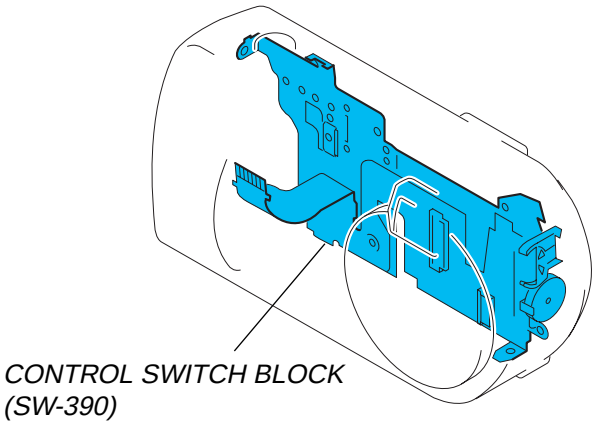
2-10. CIRCUIT BOARDS LOCATION

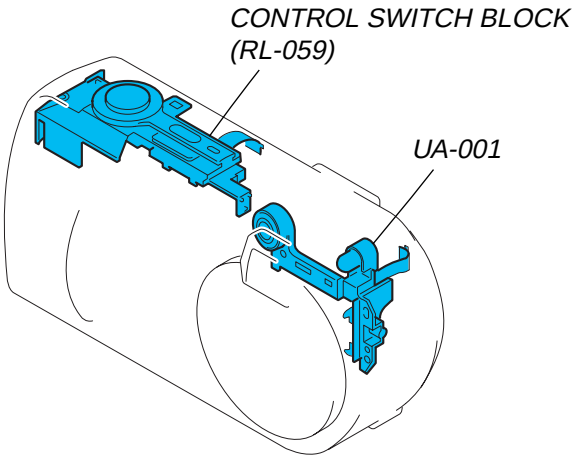


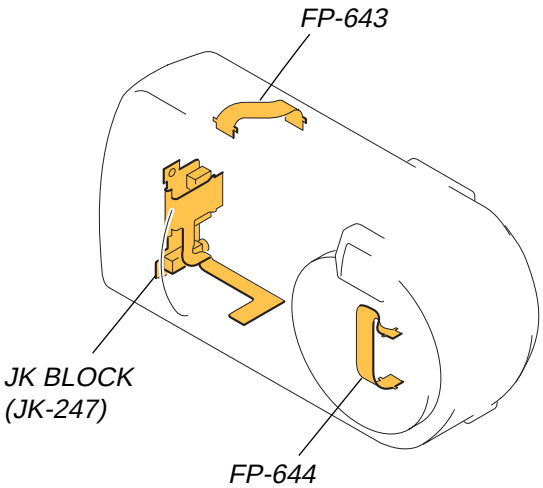
Board Name	Function
SY-84	CCD IMAGER, CAMERA A/D CONV, LENS DRIVE, CAMERA DSP, VIDEO AMP, SH DSP, CLK GEN., FRONT CONTROL, AUDIO I/O, LCD DRIVE, TIMING GEN., DC IN, DC-DC CONVERTER CONNECTOR.
ST-82	FLASH DRIVE

2-11. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the lens device are not shown.





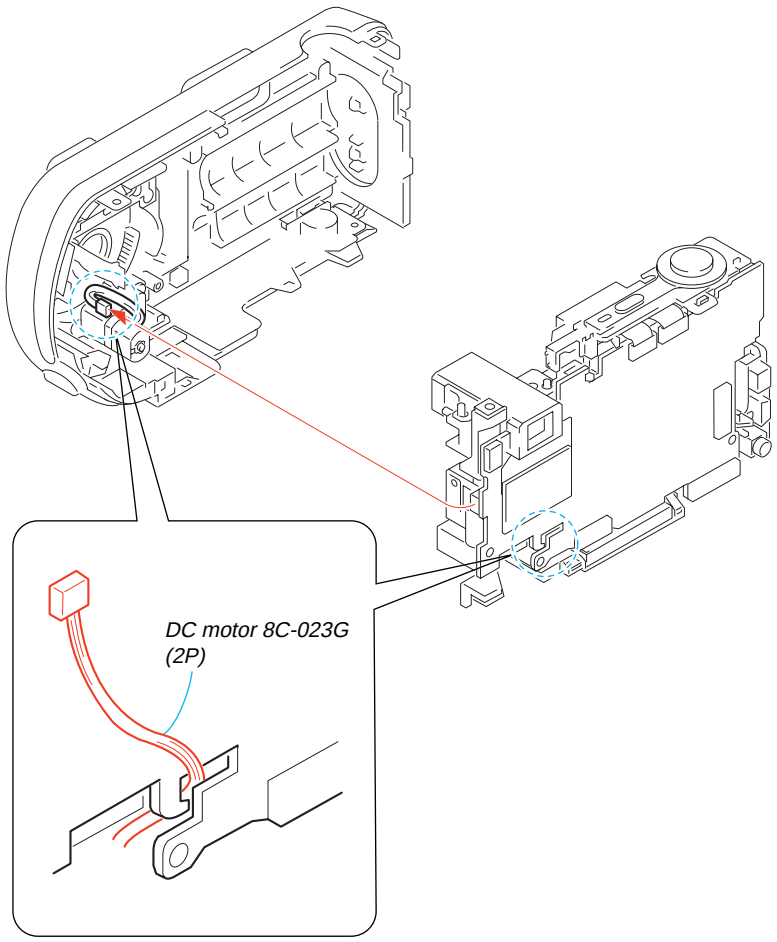


27/Feb/2003

HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

MAIN BLOCK ASSEMBLY



COVER

3. BLOCK DIAGRAMS

Link

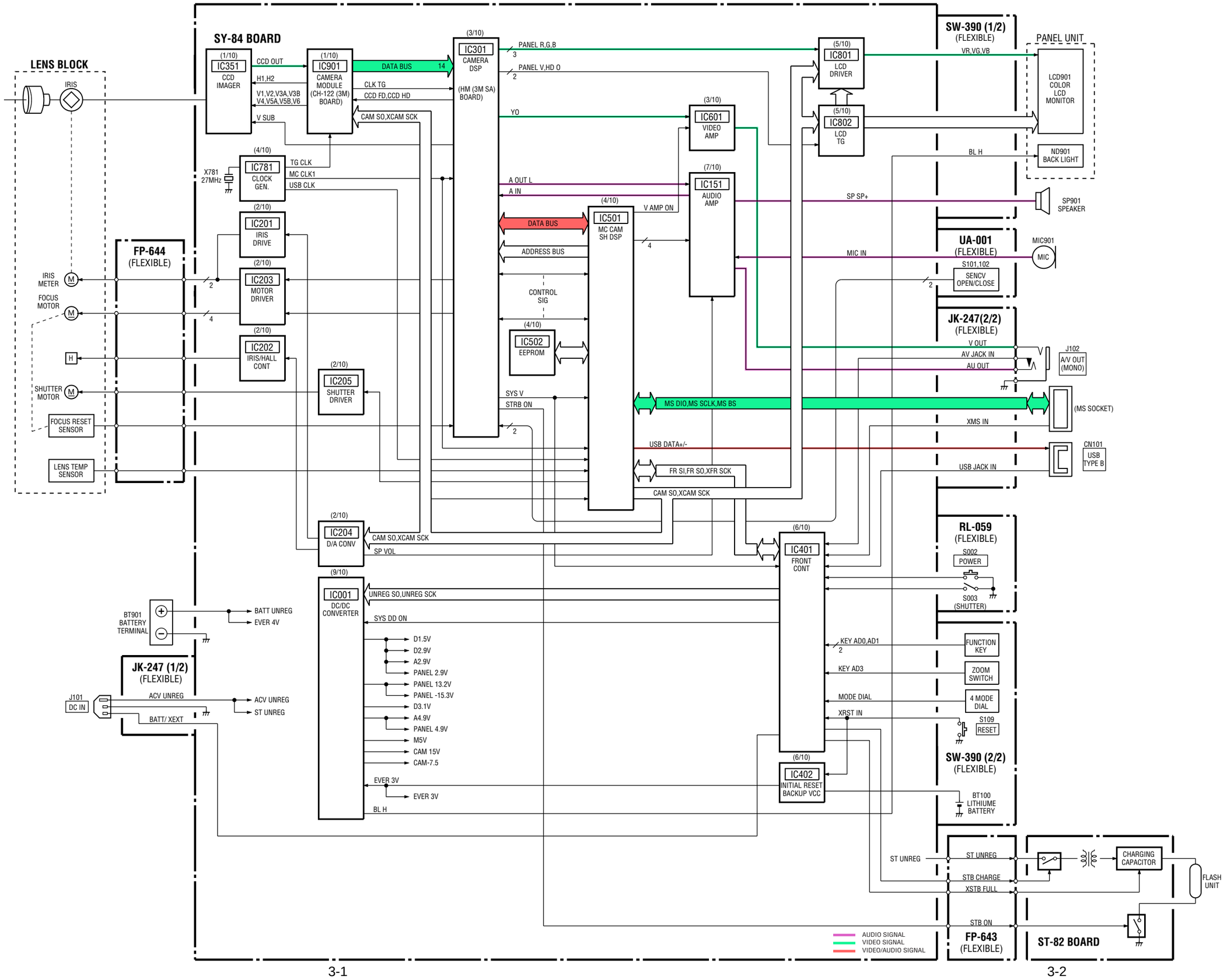
- OVERALL BLOCK DIAGRAM
- FRONT/LCD BLOCK DIAGRAM
- CAMERA BLOCK DIAGRAM
- POWER BLOCK DIAGRAM

COVER

SECTION 3
BLOCK DIAGRAMS

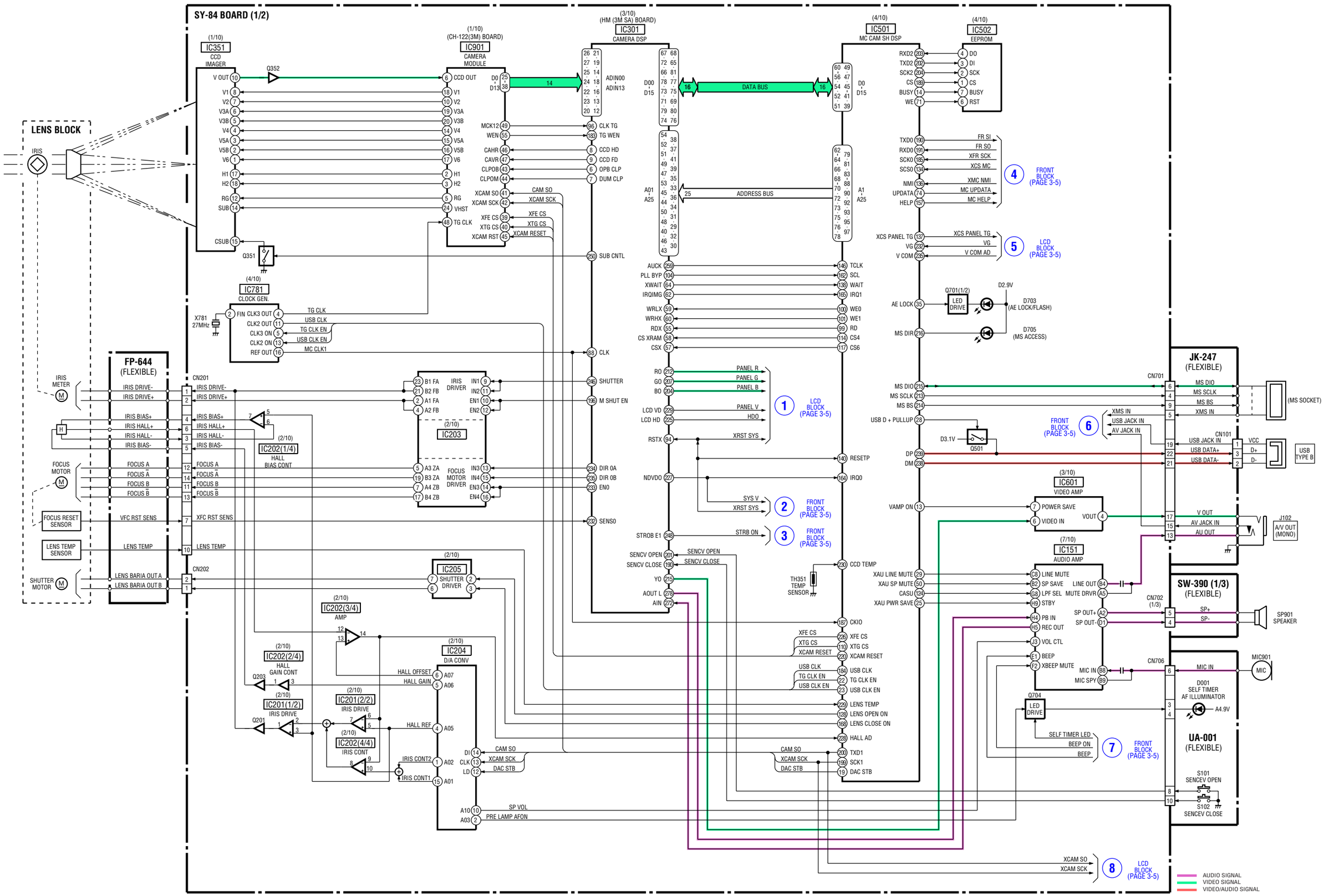
3-1. OVERALL BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



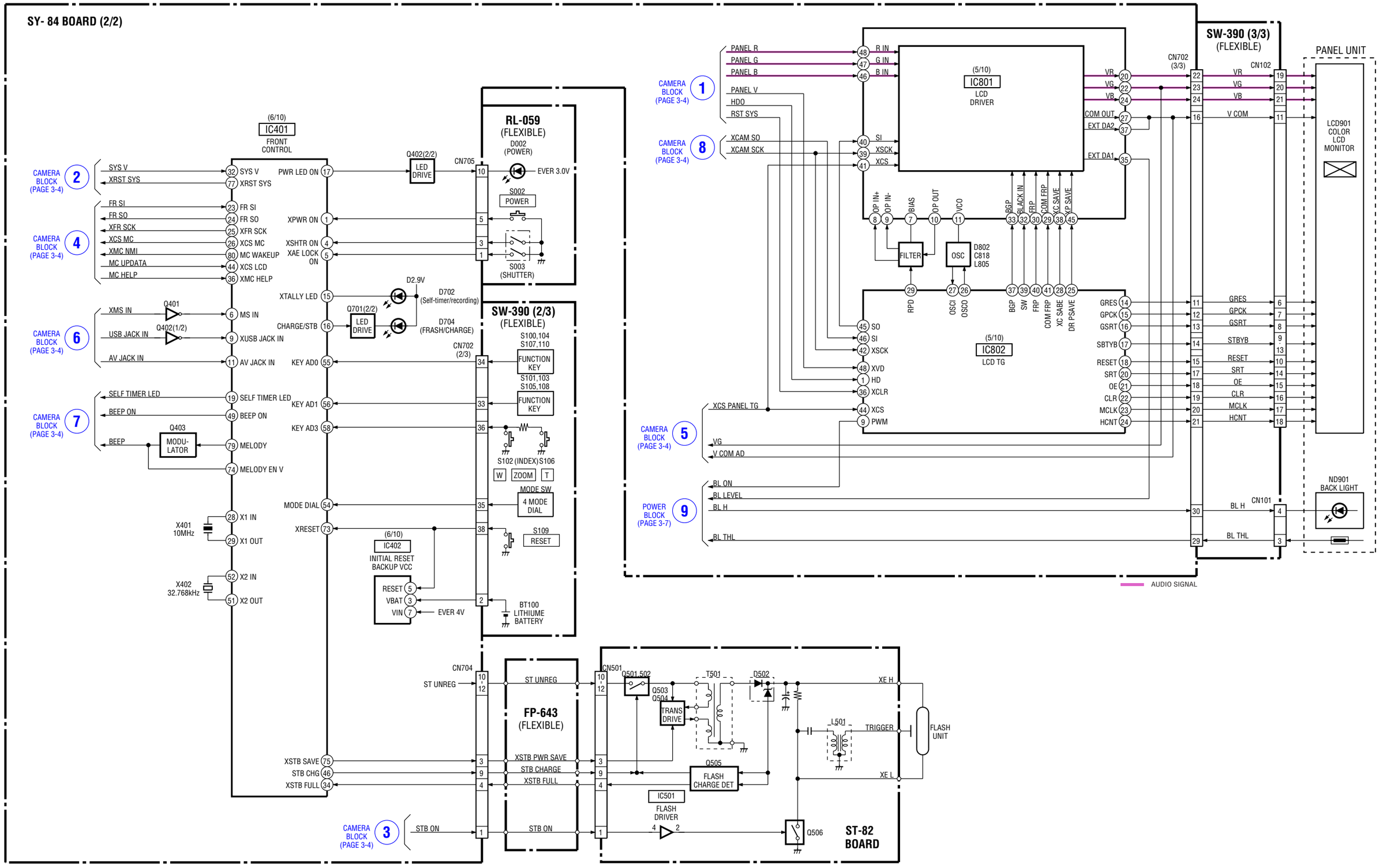
3-2. CAMERA BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



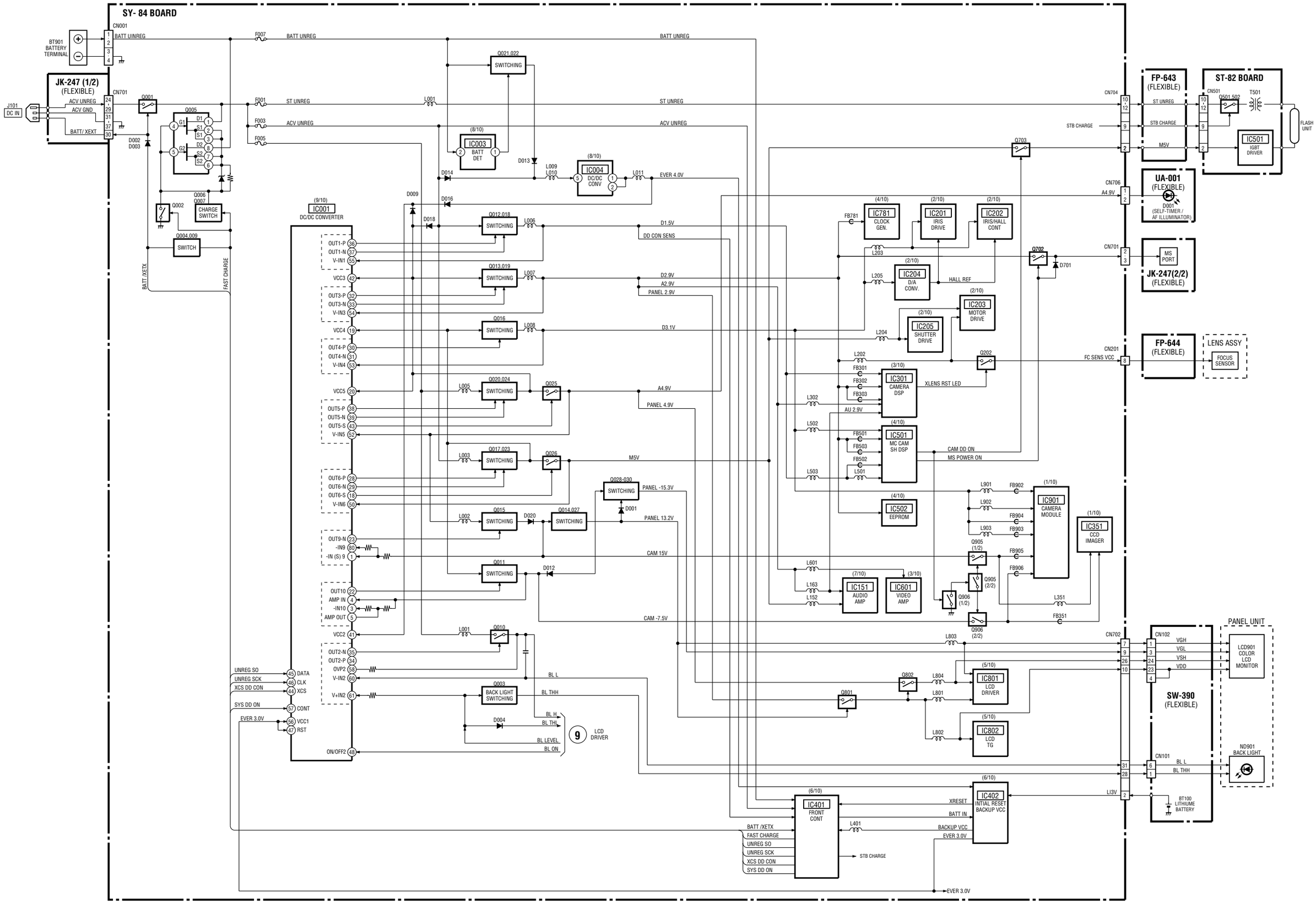
3-3. FRONT/LCD BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



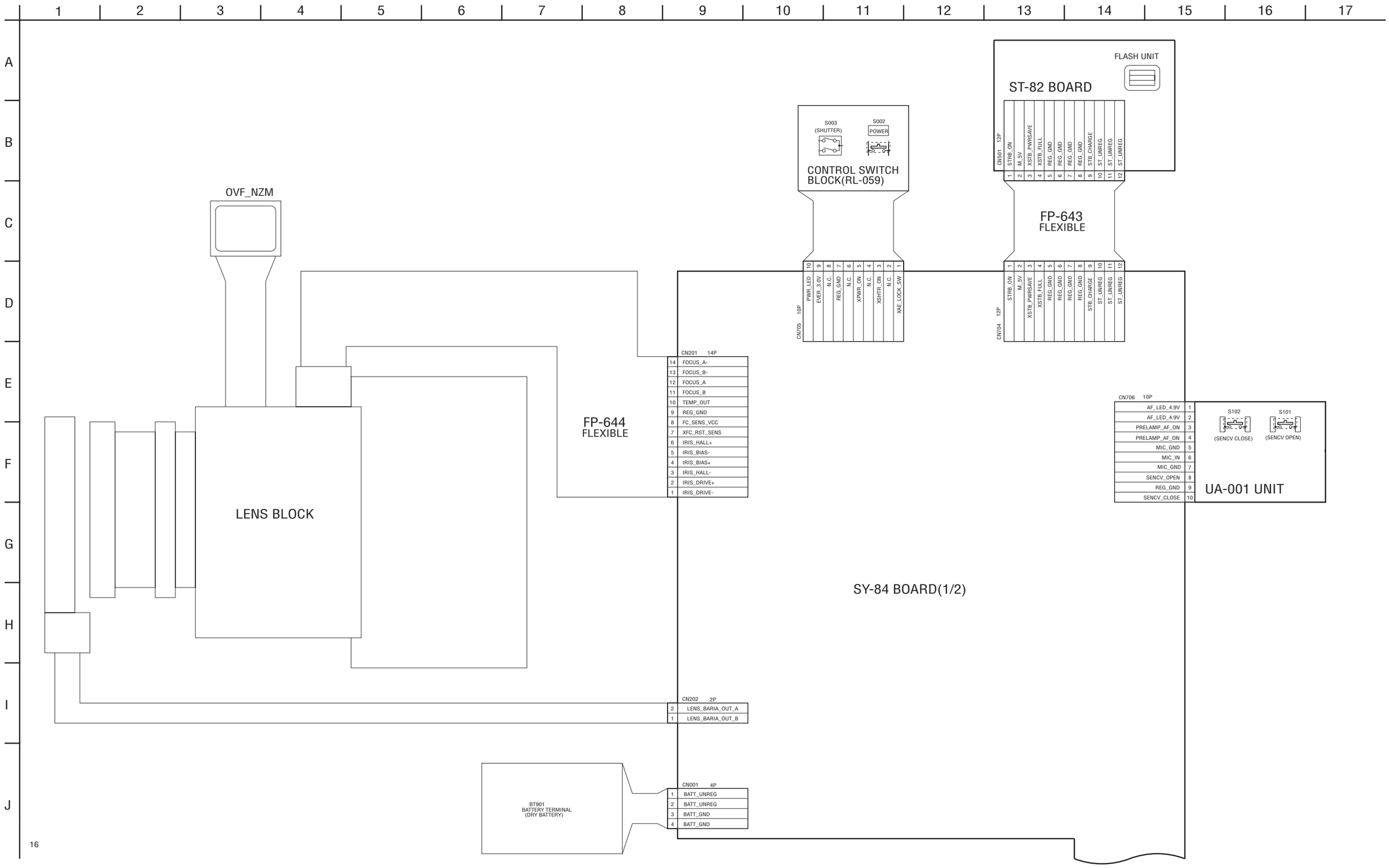
3-4. POWER BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

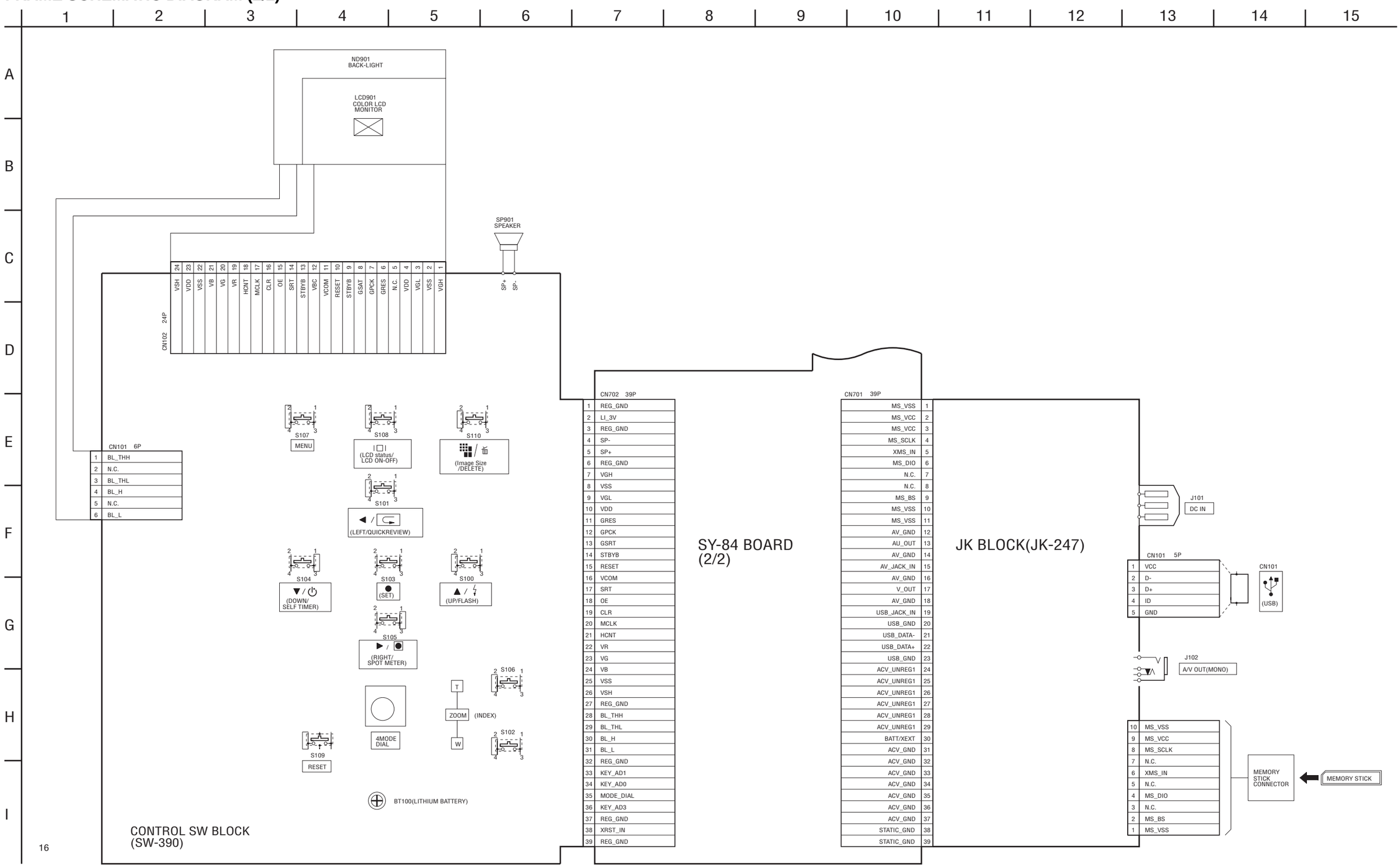


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1/2)



FRAME SCHEMATIC DIAGRAM (2/2)



COVER

4-2. SCHEMATIC DIAGRAMS

Link

- ST-82 BOARD (FLASH DRIVE)
- CONTROL SWITCH BLOCK (SW-390)
- FP-643 FLEXIBLE BOARD
- CONTROL SWITCH BLOCK (RL-059)
- JK BLOCK (JK-247) (JACK)
- UA-001 (MIC, AF LED)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS

COVER

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example

C541	L452
22U	10UH
TA A	2520

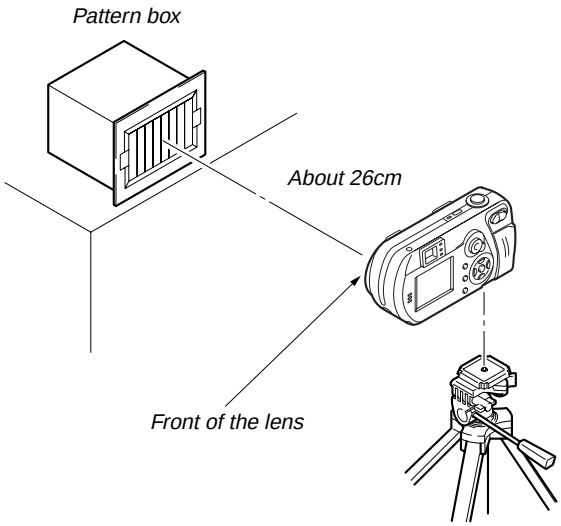
Kinds of capacitor
Temperature characteristics
External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with * differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : VIDEO SIGNAL (ANALOG)
- : AUDIO SIGNAL (ANALOG)
- : VIDEO/AUDIO SIGNAL
- : VIDEO/AUDIO/SERVO SIGNAL
- : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

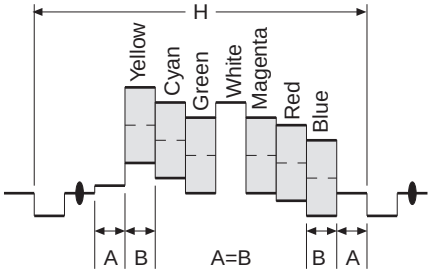


Fig. a (Video output terminal output waveform)

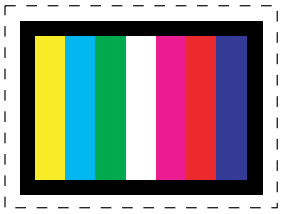


Fig.b (Picture on monitor TV)

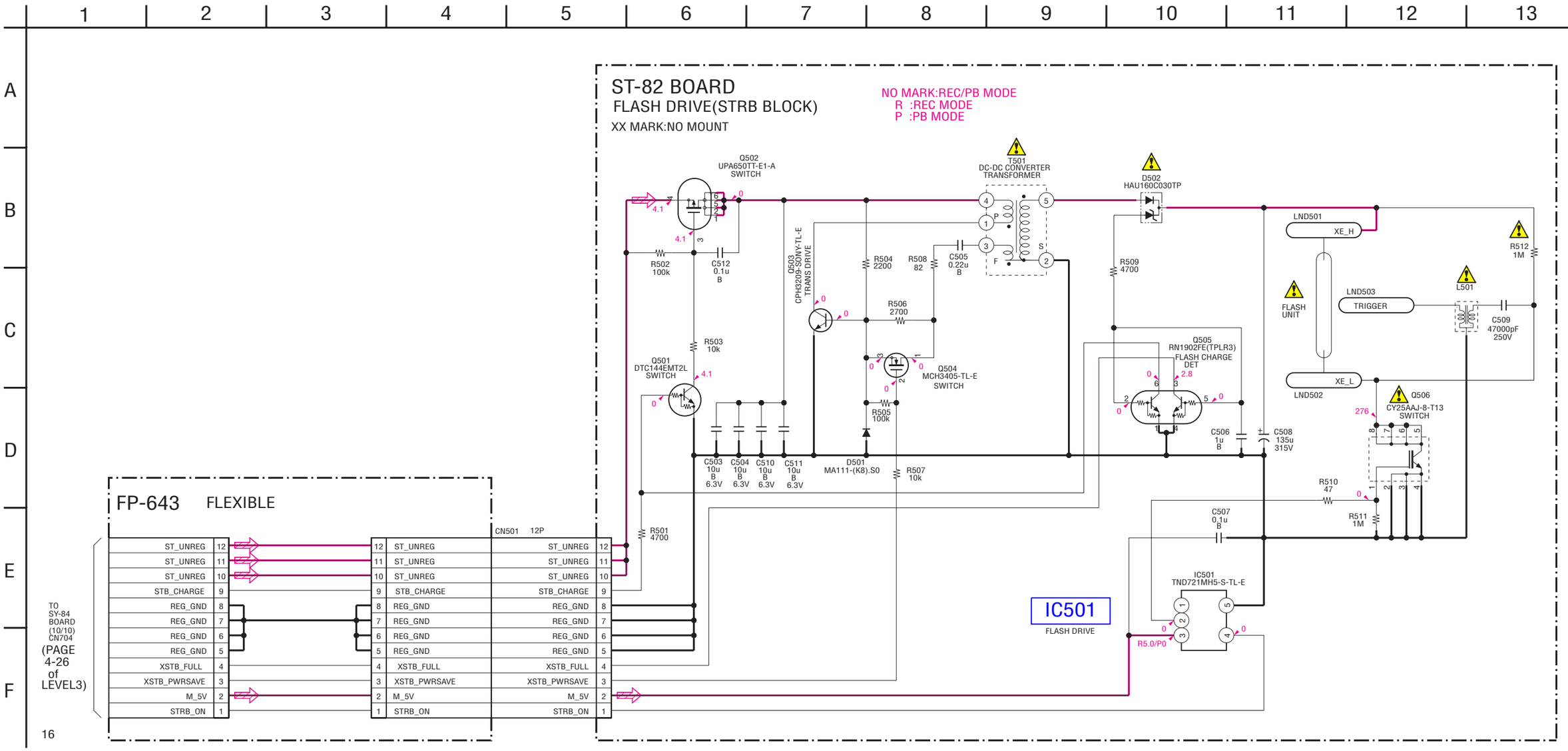
When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-2. SCHEMATIC DIAGRAMS

For Schematic Diagram

• Refer to page 4-37 for printed wiring board of ST-82 board.



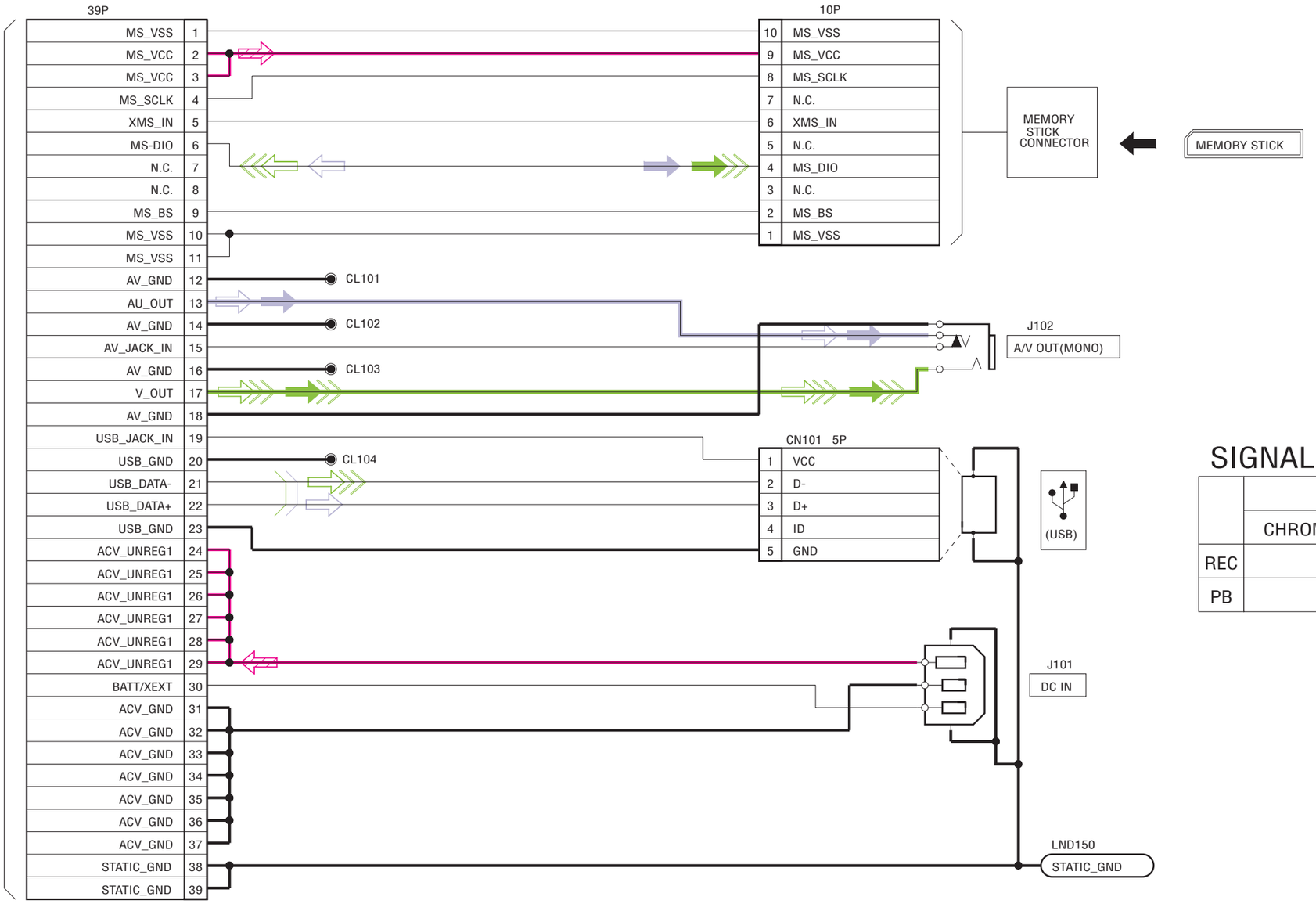
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Schematic diagram of the SY-84 board are not shown.
Pages from 4-7 to 4-26 are not shown.

JK BLOCK(JK-247)

JACK

XX MARK:NO MOUNT



SIGNAL PATH

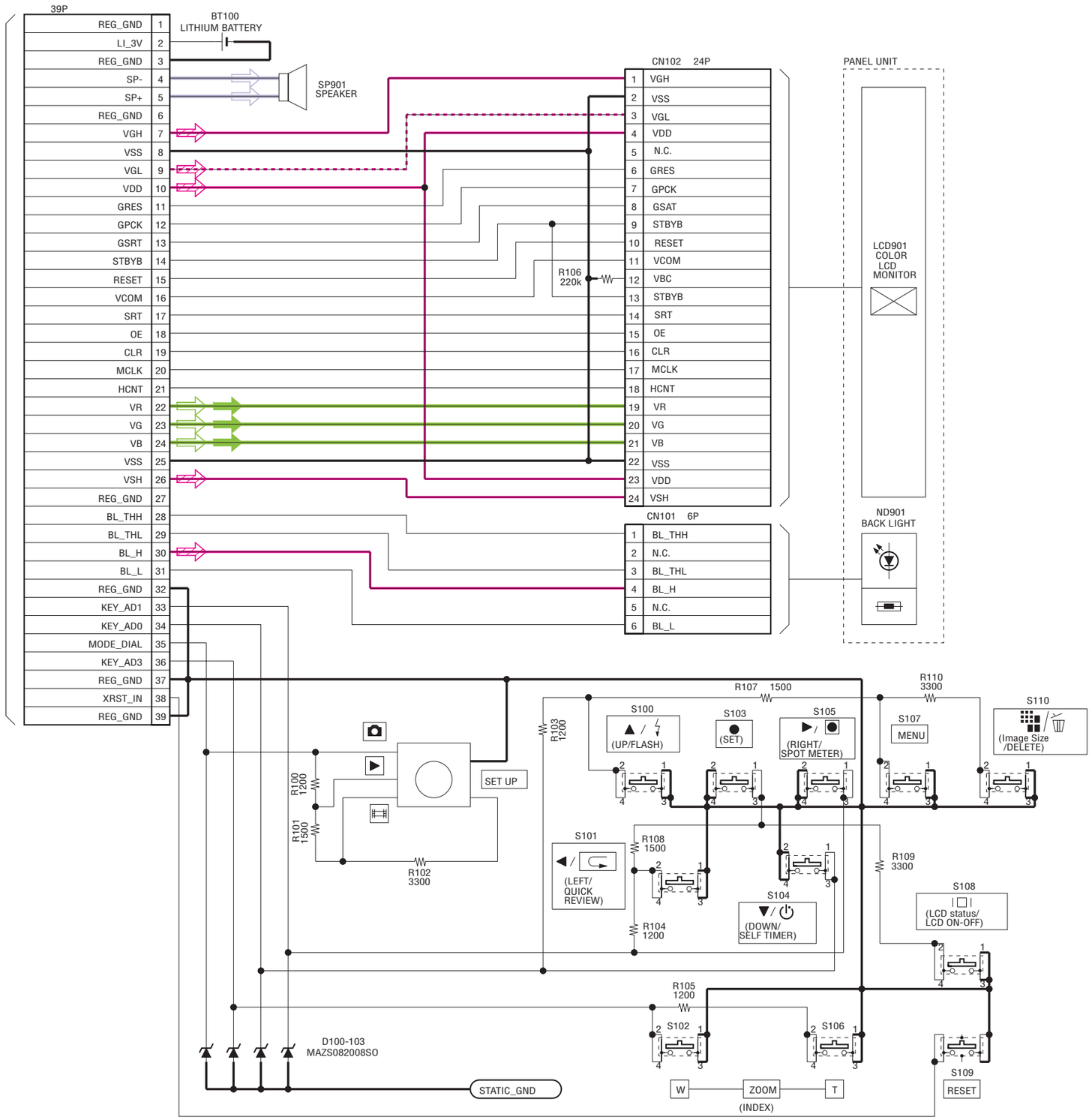
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇒	⇒
PB			⇨	⇨

• CONTROL SWITCH BLOCK (SW-391) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.

CONTROL SWITCH BLOACK (SW-390)

LCD,CONTROL SW(SW BLOCK)

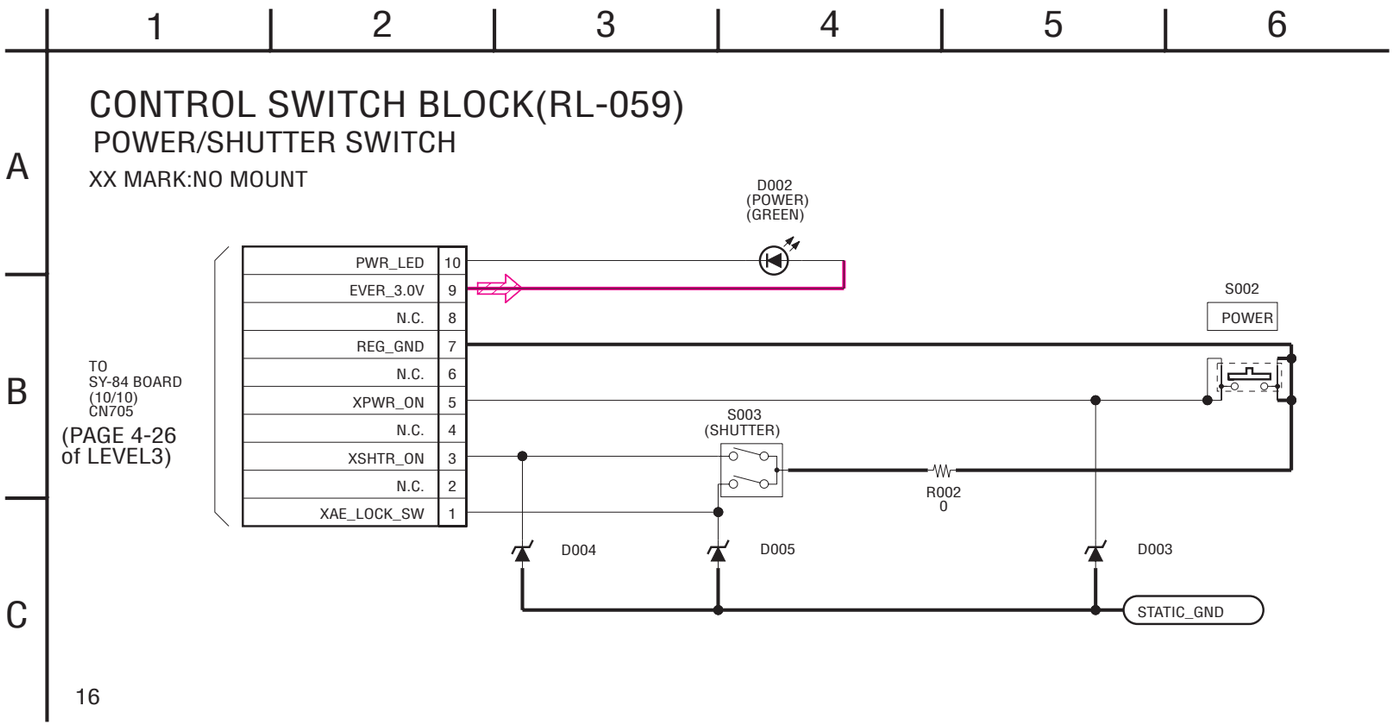
XX MARK:NO MOUNT



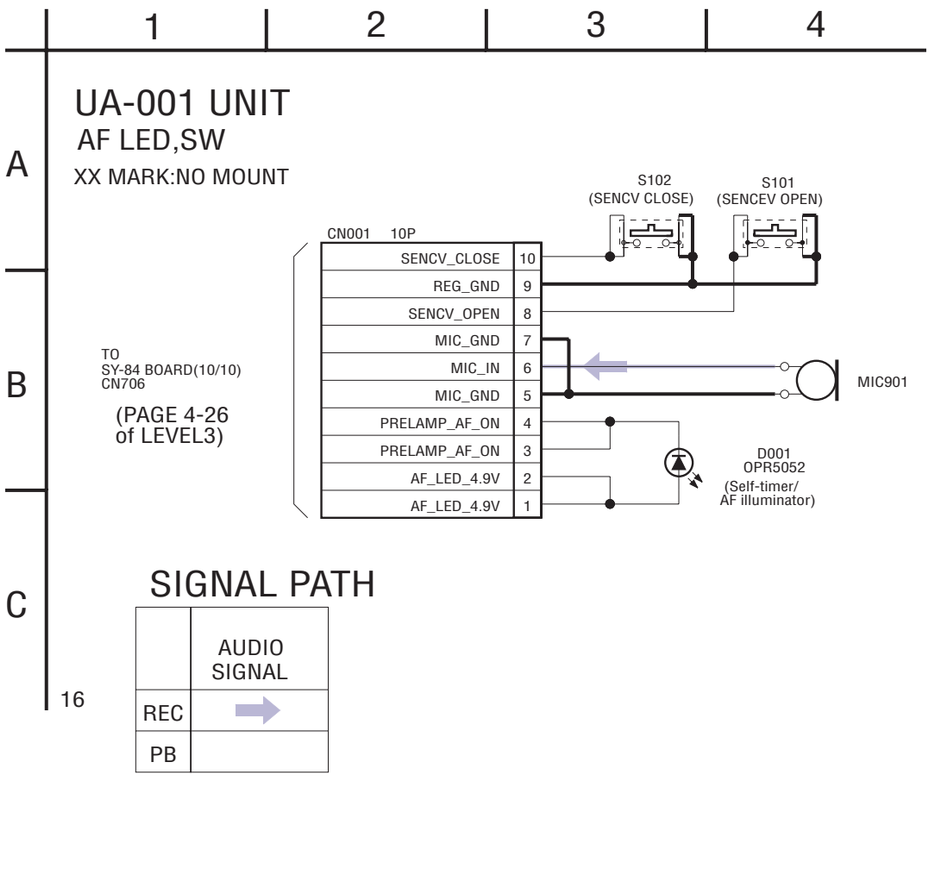
SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

• CONTROL SWITCH BLOCK (RL-059) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



• UA-001 UNIT is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



COVER

4-3. PRINTED WIRING BOARDS

Link

- ST-82 BOARD
- JK BLOCK (JK-247)
- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

COVER

4-3. PRINTED WIRING BOARDS

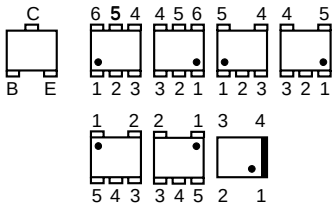
THIS NOTE IS COMMON FOR WIRING BOARDS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

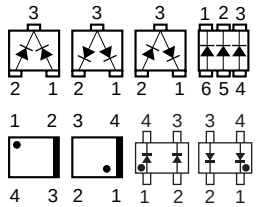
- : Uses unleaded solder.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



BOARD INFORMATION

board name	parts location (shown on page)	waveform (shown on page)	pattern		CSP IC
			number of layers	layers not shown	
ST-82	4-47	–	4	2 to 3	–
JK BLOCK	–	–	1	–	–
SY-84	4-48	4-45	8	2 to 7	IC151, IC401, IC501, IC001, IC301, IC901

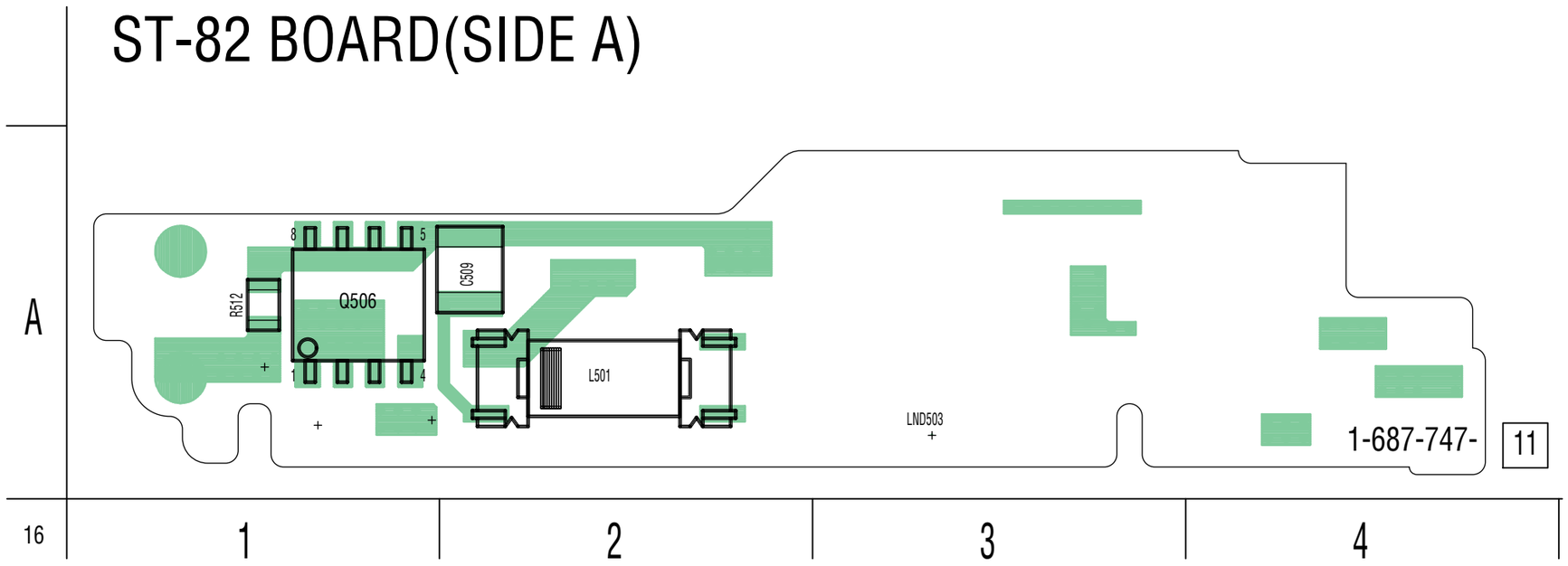
4-3. PRINTED WIRING BOARDS

ST-82 (FLASH DRIVE) PRINTED WIRING BOARD

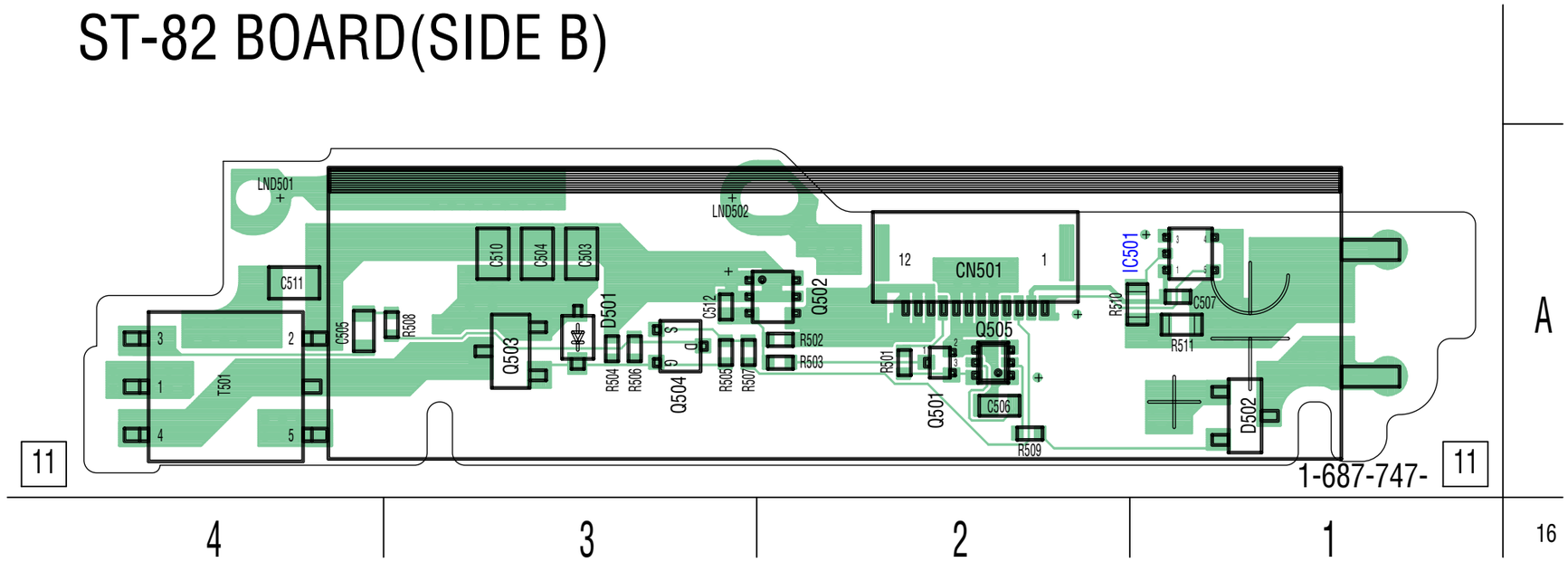
• Refer to page 4-35 for common note for printed wiring board.

• : Uses unleaded solder.

ST-82 BOARD(SIDE A)

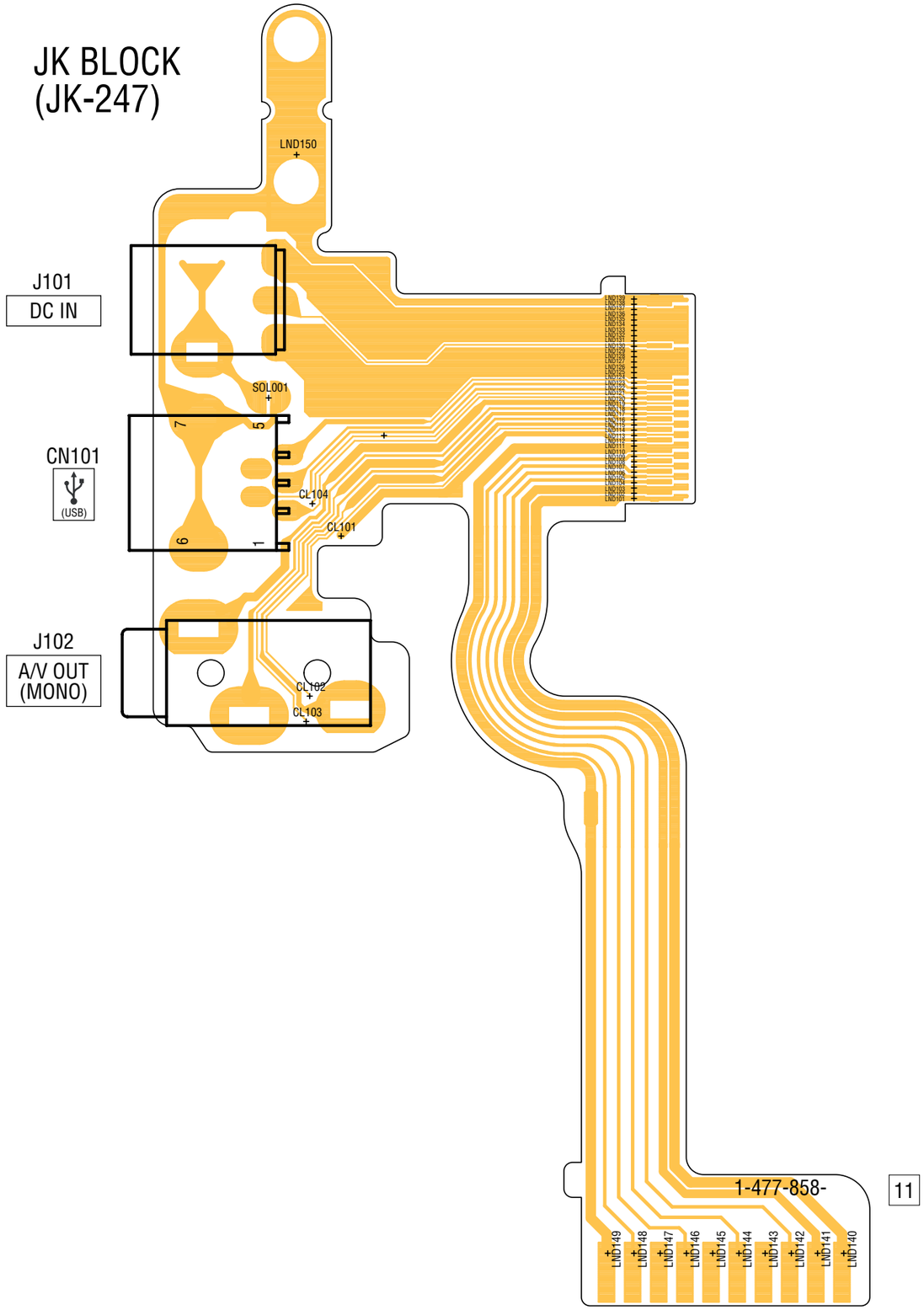


ST-82 BOARD(SIDE B)



Printed wiring board of the SY-84 board are not shown.
Pages from 4-39 to 4-42 are not shown.

JK BLOCK (JK-247) (JACK) FLEXIBLE BOARD



4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

ST-82 BOARD

* C503	A-3
* C504	A-3
* C505	A-4
* C506	A-2
* C507	A-1
C509	A-1
* C510	A-3
* C511	A-4
* C512	A-3
* CN501	A-2
* D502	A-1
* IC501	A-1
L501	A-1
* Q502	A-3
* Q503	A-3
* Q504	A-3
* Q505	A-2
Q506	A-1
* R501	A-2
* R502	A-3
* R503	A-3
* R504	A-3
* R505	A-3
* R506	A-3
* R508	A-4
* R509	A-2
* R510	A-1
* R511	A-1
R512	A-1
* T501	A-4

Mounted parts location of the SY-84 board is not shown.
Page 4-48 is not shown.

COVER

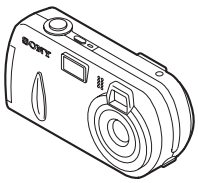
NOTE

5. REPAIR PARTS LIST

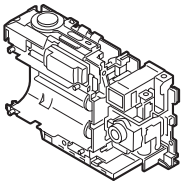
NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS

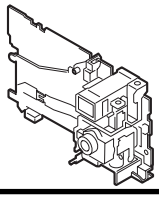


CABINET (FRONT) SECTION



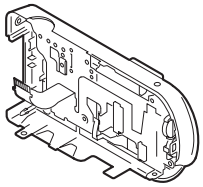
A

MAIN BLOCK ASSEMBLY



B

LENS FRAME BLOCK ASSEMBLY



CABINET (REAR) BLOCK ASSEMBLY

Link

ELECTRICAL PARTS LIST

ACCESSORIES

- SY-84 BOARD B
- ST-82 BOARD A

COVER

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  JE : Tourist model
  CH : Chinese model
  KR : Korea model
  HK : Hong Kong model
  J : Japanese model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

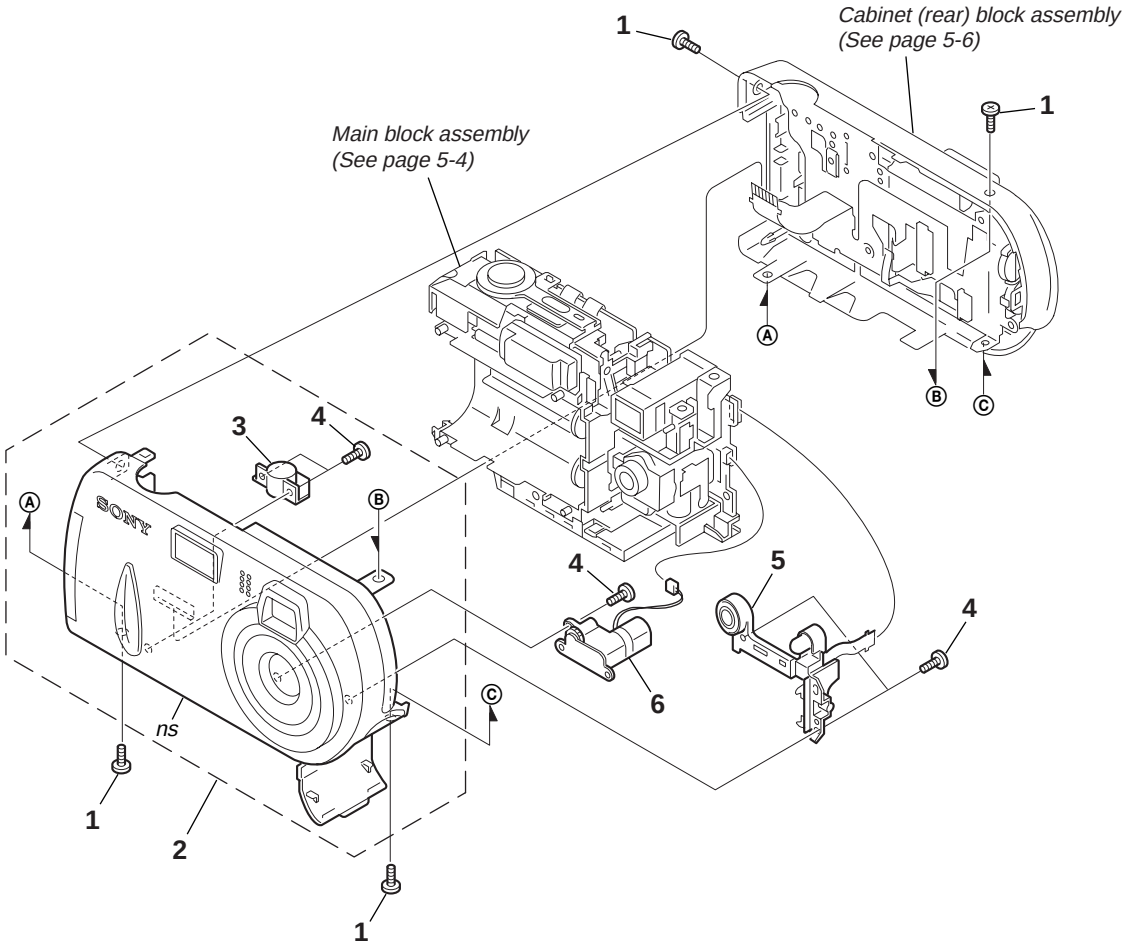
COVER

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. CABINET (FRONT) SECTION

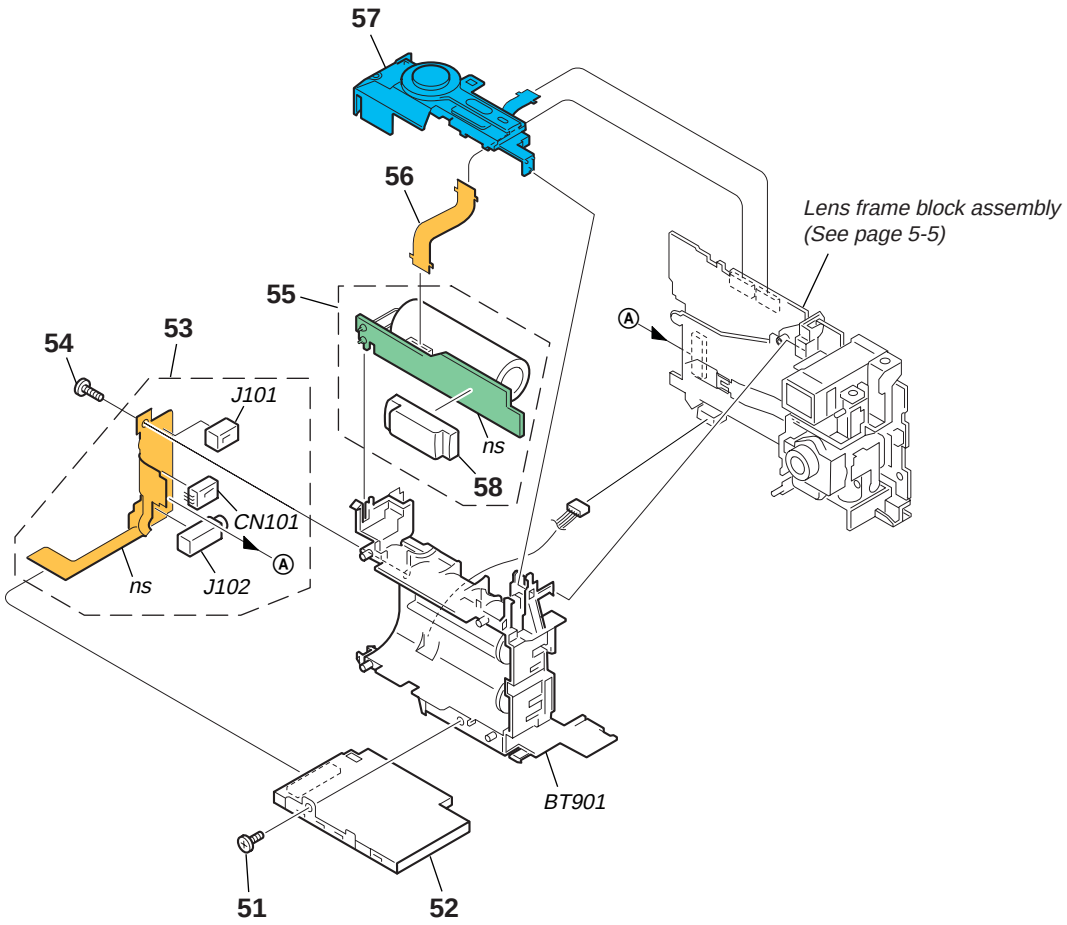
ns : not supplied



Ref. No.	Part No.	Description	Remarks
1	3-968-729-71	SCREW (M2), LOCK ACE, P2	
2	X-3953-14501	CABINET (FRONT) ASSY	
3	3-080-977-01	TRIPOD	
4	3-080-204-21	SCREW, TAPPING, P2	
5	1-477-808-11	PARTS UNIT (UA-001)	
6	1-763-818-21	MOTOR, DC 8C-027G	

5-1-2. MAIN BLOCK ASSEMBLY

ns : not supplied



Ref. No.	Part No.	Description	Remarks
51	3-078-890-11	SCREW, TAPPING	
52	1-815-853-21	MEMORY STICK CONNECTOR	
53	1-477-858-11	JK BLOCK (JK-247)	
54	3-080-204-21	SCREW, TAPPING, P2	
⚠55	A-7078-600-A	ST-82 (S) BOARD, COMPLETE	
56	1-687-751-11	FP-643 FLEXIBLE BOARD	

Ref. No.	Part No.	Description	Remarks
57	1-477-806-11	CONTROL SWITCH BLOCK (RL-059)	
⚠58	1-477-803-11	FLASH UNIT	
BT901	1-756-346-11	HOLDER, BATTERY(WITH TERMINAL)	
CN101	1-794-962-11	CONNECTOR, SQUARE TYPE(USB 5P)	
J101	1-817-331-11	DC JACK 5P (DC IN)	
J102	1-569-950-31	JACK (SMALL TYPE) (A/V OUT (MONO))	

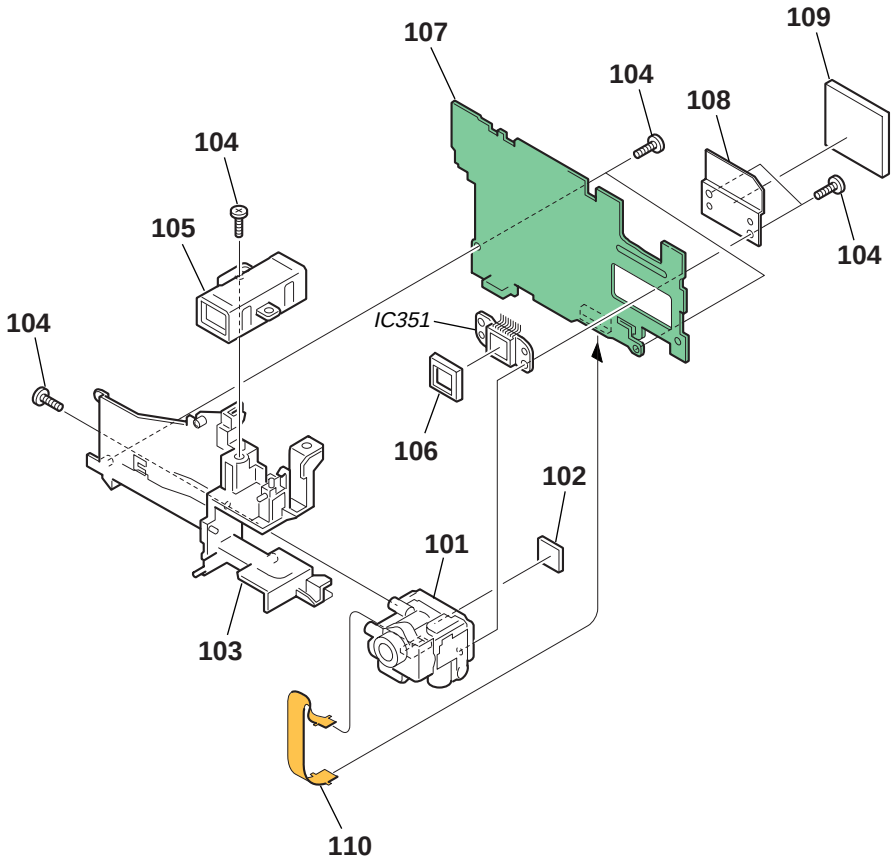
Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

5. REPAIR PARTS LIST

5-1-3. LENS FRAME BLOCK ASSEMBLY

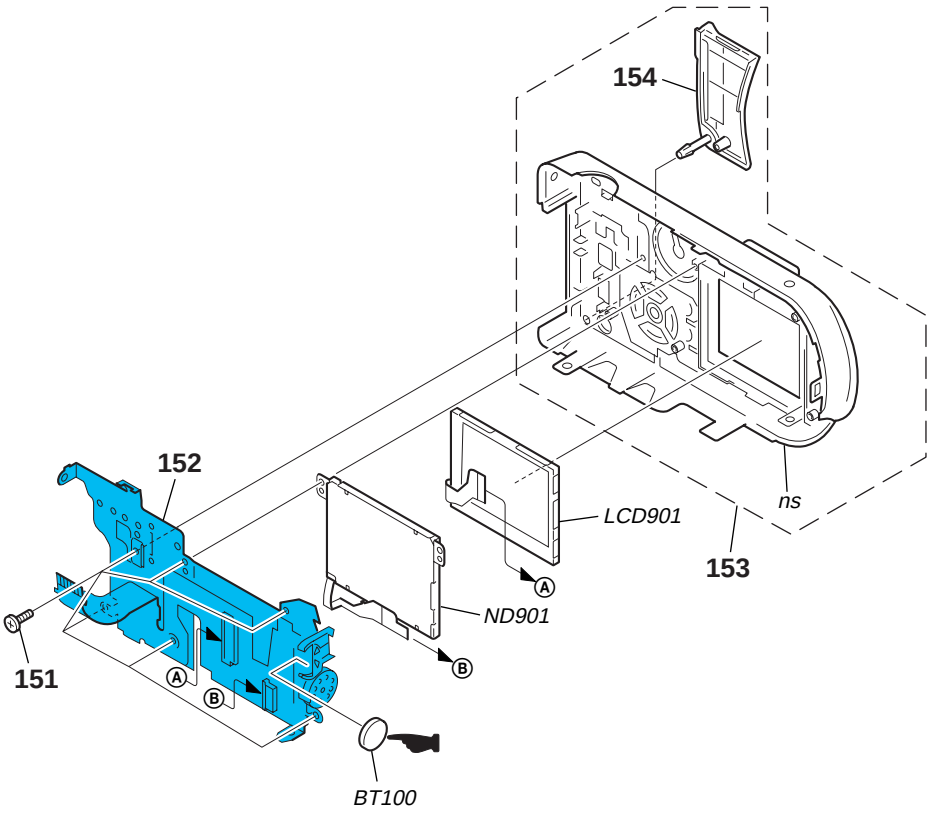


Be sure to read “Precautions upon replacing CCD imager” on page 4-7 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
101	8-848-757-01	LSV-780A	
102	1-758-917-11	FILTER BLOCK, OPTICAL	
103	X-3953-16701	LENS FRAME ASSY	
104	3-080-204-21	SCREW, TAPPING, P2	
105	1-758-897-11	FINDER, OPTICAL (LSV-860A)	
106	3-074-038-01	RUBBER (MM), CCD SEAL	
107	A-7078-685-A	SY-84 BOARD, COMPLETE (SERVICE)	
108	3-082-420-01	HEAT SINK, CCD	
109	3-082-426-01	SHEET, CCD RADIATION	
110	1-687-752-13	FP-644 FLEXIBLE BOARD	
IC351	A-7013-723-A	CCD BLOCK ASSY (CCD IMAGER)	

5-1-4. CABINET (REAR) BLOCK ASSEMBLY

ns : not supplied



: For the installation position of BT100 (Lithium battery), refer to page 2-3.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description	Remarks
151	3-078-890-11	SCREW, TAPPING	
152	1-477-807-11	CONTROL SWITCH BLOCK (SW-390)	
153	X-3953-14401	CABINET (REAR) ASSY	
154	3-080-985-01	COVER, JACK	
⚠ND901	1-477-761-21	BLOCK LIGHT GUIDE PLATE (1.5)	
LCD901	1-805-168-21	INDICATOR MODULE LIQUID CRYST	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	A-7078-685-A	SY-84 BOARD, COMPLETE (SERVICE)
		**********

Electrical parts list of the SY-84 board are not shown.
Pages from 5-7 to 5-12 are not shown.

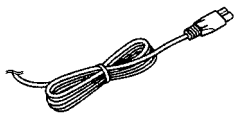
	A-7078-600-A	ST-82 (S) BOARD, COMPLETE			
		**********			
⚠	1-477-803-11	FLASH UNIT			
		< CAPACITOR >			
C503	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C504	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C505	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C506	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C508	1-100-542-11	CAP, ELECT	135uF		
C509	1-137-723-21	CERAMIC CHIP	0.047uF	10%	250V
C510	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C511	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C512	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
		< CONNECTOR >			
CN501	1-816-644-11	FFC/FPC CONNECTOR (LIF) 12P			
		< DIODE >			
D501	8-719-073-01	DIODE MA111-(K8).S0			
⚠D502	6-500-237-01	DIODE HAU160C030TP			
		< IC >			
IC501	6-703-635-01	IC TND721MH5-S-TL-E			
		< COIL >			
⚠L501	1-456-193-11	COIL, TRIGGER			
		< TRANSISTOR >			
Q501	6-550-119-01	TRANSISTOR	DTC144EMT2L		
Q502	6-550-528-01	TRANSISTOR	UPA650TT-E1-A		
Q503	6-550-183-01	TRANSISTOR	CPH3209-SONY-TL-E		
Q504	8-729-056-01	TRANSISTOR	MCH3405-TL-E		
Q505	8-729-053-57	TRANSISTOR	RN1902FE(TPLR3)		
⚠Q506	8-729-053-74	TRANSISTOR	CY25AAJ-8-T13		
		< RESISTOR >			
R501	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R502	1-218-977-11	RES-CHIP	100K	5%	1/16W
R503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R504	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R505	1-218-977-11	RES-CHIP	100K	5%	1/16W
R506	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R507	1-218-965-11	RES-CHIP	10K	5%	1/16W
R508	1-218-940-11	RES-CHIP	82	5%	1/16W
R509	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R510	1-216-805-11	METAL CHIP	47	5%	1/16W
R511	1-216-857-11	METAL CHIP	1M	5%	1/16W
⚠R512	1-216-121-11	RES-CHIP	1M	5%	1/10W
		< TRANSFORMER >			
⚠T501	1-437-737-11	TRANSFORMER, DC-DC CONVERTER			

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

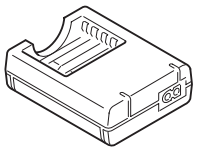
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Checking supplied accessories.

Make sure that the following accessories are supplied with your camcorder.

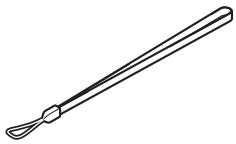


Power cord (1)(AUS model)
⚠ 1-696-819-21
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-779-985-11

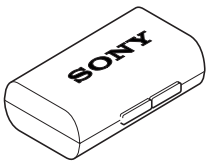


Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-32

Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

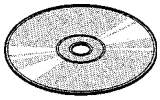


Hand strap (1)
3-070-841-01

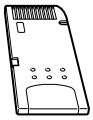


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

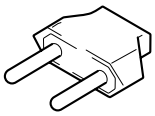


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,
CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

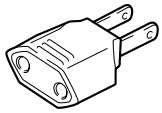


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH
batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

- Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	J	: Japanese model
CH	: Chinese model		

Other accessories

3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH) (US,CND,AEP,UK,E,HK,AUS,CH,JE)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP,JE)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)
3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP,JE)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR,JE)

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-876-228-31

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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.02	Official Release	—	—

DSC-P32

Ver 1.0 2003. 02
Revision History

SECTION 6
ADJUSTMENTS

ADJ

Link

- Before starting adjustment
  - Adjusting items when replacing main parts and boards
- ADJUSTMENT
  - PREPARATIONS BEFORE ADJUSTMENT
  - INITIALIZATION OF 0F, 0E, 2F, 4F, 6F PAGE DATA
  - VIDEO SYSTEM ADJUSTMENTS
  - CAMERA SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENT
  - SYSTEM CONTROL SYSTEM ADJUSTMENT
- SERVICE MODE
  - APPLICATION FOR ADJUSTMENT (SEUS)
  - SERVICE MODE

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2. DISASSEMBLY	○	×
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4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	ST-82, JK-247, RL-059, UA-001 BOARD, CONTROL SWITCH BLOCK (SW-390), FP-643, FP-644 FLEXIBLE	SY-84 BOARD
5. REPAIR PARTS LIST	EXPLODED VIEWS	×
	ELECTRICAL PARTS	○ (SY-84 BOARD)

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9-876-228-51

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* Color reproduction frame and AF illumination frame are shown on page 6-41.

COVER

SECTION 6
ADJUSTMENTS

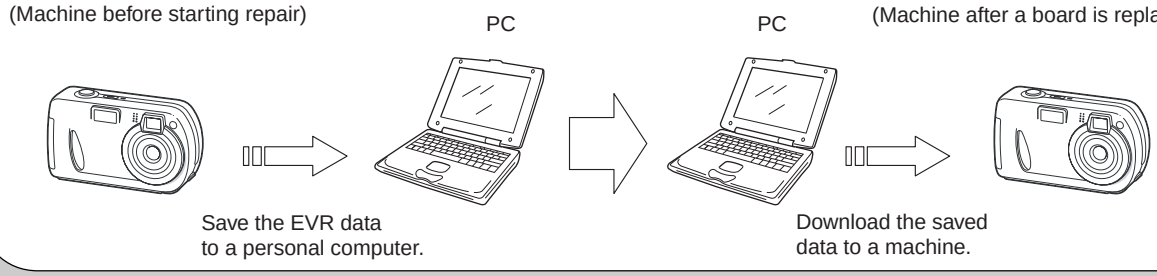
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

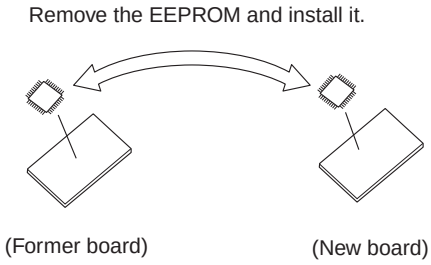
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



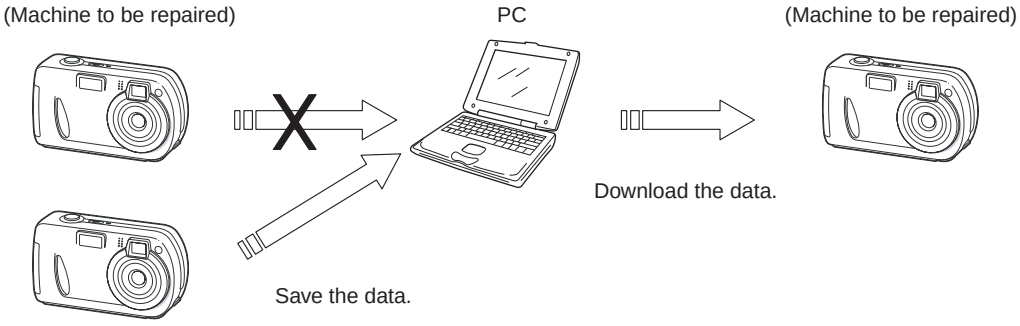
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-2 for the items to be checked.)

COVER

1-1. Adjusting items when replacing main parts and boards.

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts: Block replacement: Lens device	Flash unit (ST-82)	Parts unit (UA-001)	LCD block LCD unit (LCD901)	LCD block Back light unit	Parts replacement: SY-84 board IC351 (CCD imager)	SY-84 board IC901 (S/H, AGC,A/D)	SY-84 board IC301 (CAMERA DSP)	SY-84 board IC601 (Video amp.)	SY-84 board IC801 (RGB drive) (LCD)	SY-84 board IC802 (Timing generator) (LCD)	Board replacement: SY-84 board (COMPLETE)	EEPROM replacement: SY-84 board IC502 (EEPROM)
Initialization of 0E, 2F, 4F, 6F page data	Initialization of 0E, 2F, 4F, 6F page data												●	●
Video	Video output level adj.								●	●			●	●
Camera	HALL adj.	●					●	●	●	●	●	●	●	●
	Flange back adj.	●					●	●	●	●	●	●	●	●
	F No. standard data Input	●					●	●	●	●	●	●	●	●
	Mechanical shutter adj.	●					●	●	●	●	●	●	●	●
	Light value adj.	●					●	●	●	●	●	●	●	●
	AWB 3200K standard data input	●					●	●	●	●	●	●	●	●
	AWB 5800K standard data input	●					●	●	●	●	●	●	●	●
	CCD linearity check	●					●	●	●	●	●	●	●	●
	Color reproduction adj.	●					●	●	●	●	●	●	●	●
	CCD white defect compensation check	●					●	●	●	●	●	●	●	●
	CCD black defect compensation check	●					●	●	●	●	●	●	●	●
	Strobe adj.	●	●				●	●	●	●	●	●	●	●
	Auto focus illumination check	●		●			●	●	●	●	●	●	●	●
LCD	LCD initial data input												●	●
	VCO adj.										●	●	●	●
	Bright adj.										●		●	●
	Contrast adj.								●		●		●	●
	V COM level adj.										●		●	●
	V COM adj.				●						●		●	●
	White balance adj.				●	●					●		●	●
System control	Battery end adj.												●	●

Table. 6-1-1.

COVER

6-1. ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT

1-1-1. List of Service Tools

• Oscilloscope • Color monitor • Vectorscope • AC power adapter
• Regulated power supply • Digital voltmeter
• Calculator which can hexadecimal calculation.

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	Pattern box PTB-450	J-6082-200-A	
J-3	Color chart for pattern box	J-6020-250-A	
J-4	Siemens star chart	J-6080-875-A	For checking the flange back
J-5	Clear chart for pattern box	J-6080-621-A	
J-6	Mini pattern box	J-6082-384-A	For adjusting the flange back
J-7	Camera table	J-6082-353-B	For adjusting the flange back
J-8	Personal computer with Windows98/ME/2000/XP installed and with two USB ports		
J-9	USB cable	1-823-932-11	For connecting the personal computer
J-10	Application for adjustment (SEUS) and HASP key		Contact our service headquarter of each area how to get the application for adjustment (SEUS) and HASP key
J-11	Background paper	J-2501-130-A	For adjusting the strobe

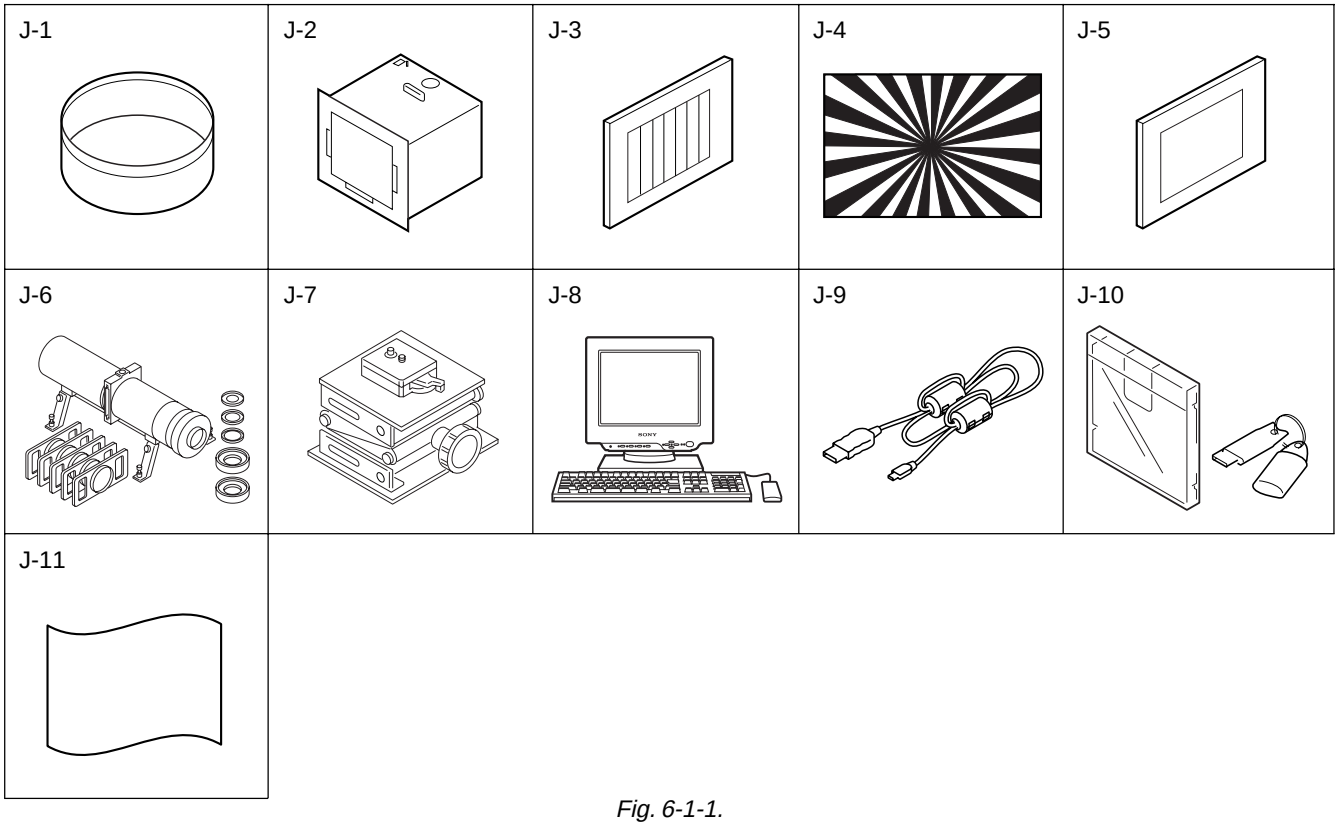


Fig. 6-1-1.

1-1-2. Preparations

1) Connect the equipment for adjustments according to Fig. 6-1-4.
2) Start up the application for adjustment (SEUS).

Note1: Setting the "Forced Power ON Mode (Forced STILL Mode)"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 21, and write data: 03.
The above procedure will enable the power (STILL mode) to be turned on with POWER switch (SY-84 board CN705) disconnected. After completing adjustments, be sure to exit the "Forced Power ON Mode".

Note2: Setting the "Forced Power ON Mode (Forced PLAY Mode)"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 21, and write data: 04.
The above procedure will enable the power (PLAY mode) to be turned on with POWER switch (SY-84 board CN705) disconnected. After completing adjustments, be sure to exit the "Forced Power ON Mode".

Note3: Exiting the "Forced Power ON Mode"
1) Select page: 00, address: 01, and set data: 01.
2) Select page: 2F, address: 21, and write data: 00.
3) Select page: 00, address: 01, and set data: 00.

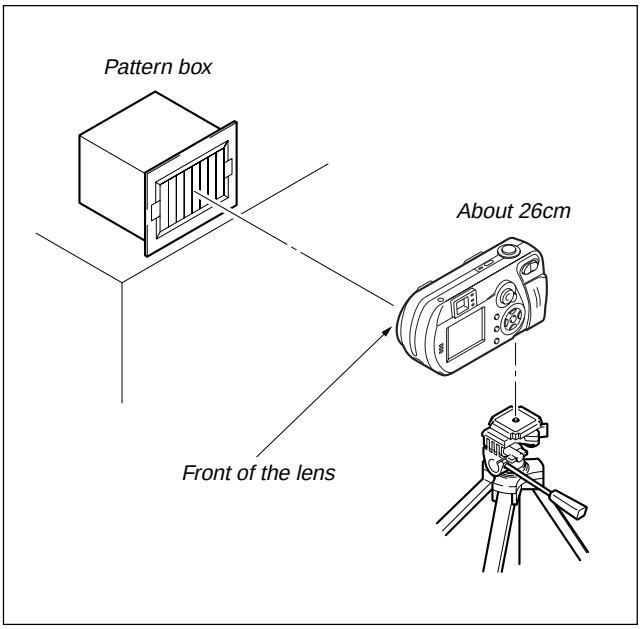


Fig. 6-1-2.

1-1-3. Discharging of the flashlight power supply

The capacitor which is used as power supply of flashlight is charged with 200V to 300V voltage. Discharge this voltage when opening the SY-84 board in order to protect service engineers from electric shock.

Discharge procedure

1. Remove the power supply (AC power adaptor or battery).
2. Fabricate the discharging jig as shown in Fig. 6-1-3 locally by yourself. Connect the discharging jig to the positive (+) and negative (–) terminal of the flash voltage charge capacitor. Allow ten seconds to discharge the voltage.

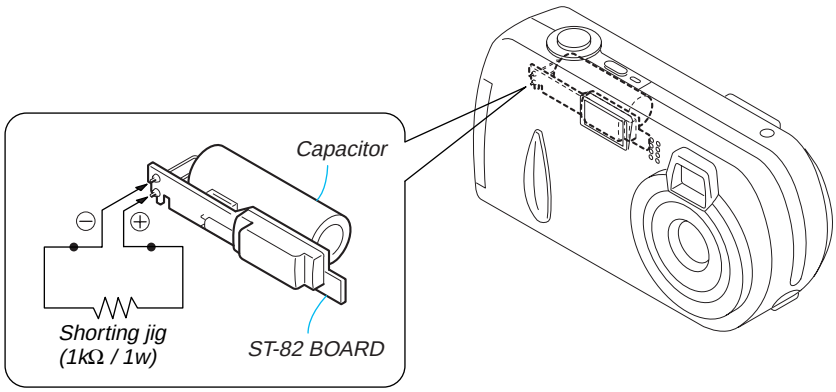


Fig. 6-1-3.

[CONNECTION OF EQUIPMENT]

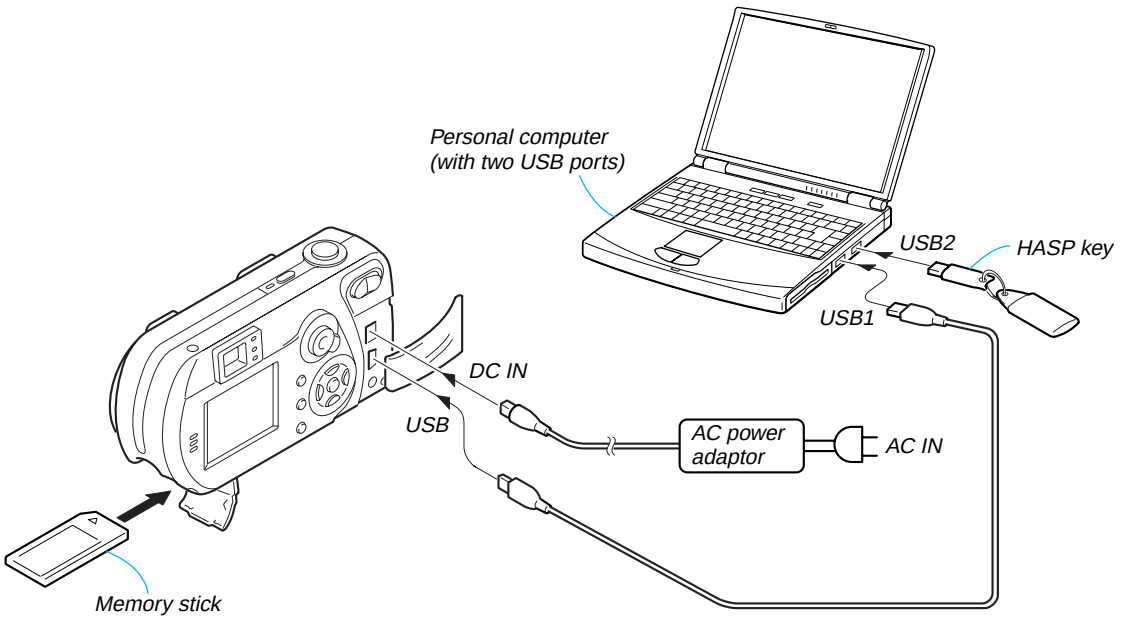


Fig. 6-1-4.

1-1-4. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

SETUP settings
USB connect (SETUP2) ..... NORMAL
MENU settings
Camera ..... AUTO

Switch settings
1. Mode dial ..... STILL (📷)
2. IMAGE SIZE 3.1M

2. Order of Adjustments

Basically carry out adjustments in the order given.

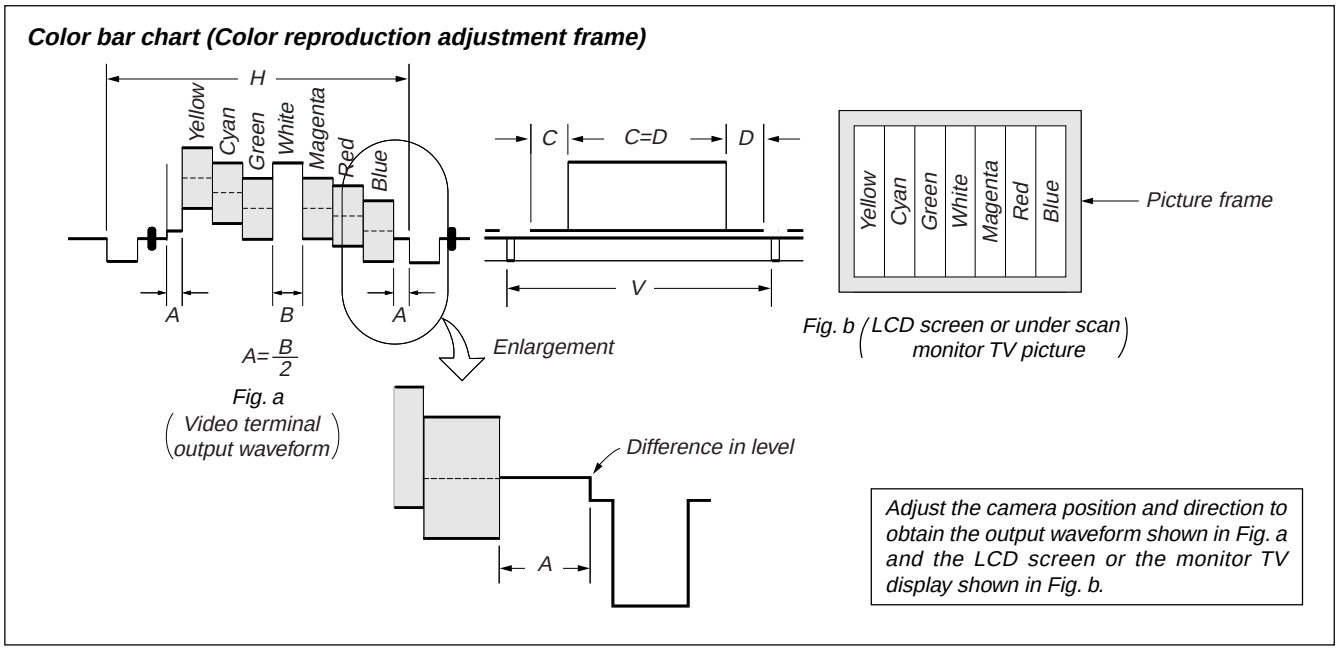


Fig.6-1-5.

3. Subjects

1) Color bar chart (Standard picture frame)
When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-5. (Standard picture frame)
2) Clear chart (Color reproduction adjustment frame)
Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)

4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate strobe adjustment.
If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

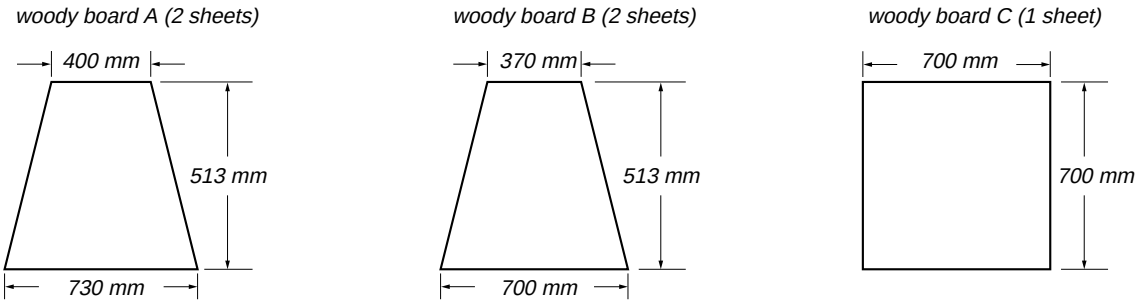


Fig. 6-1-6.

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig. 6-1-7.)

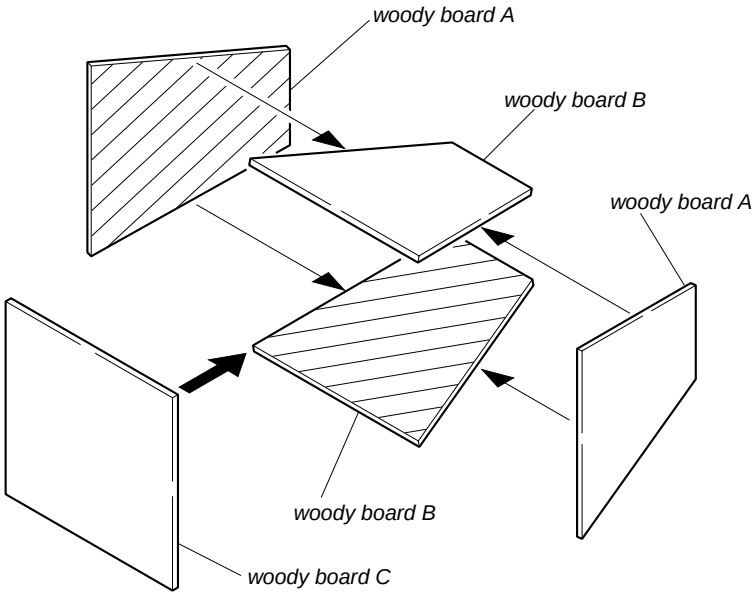


Fig. 6-1-7.

COVER

1-2. INITIALIZATION OF 0E, 2F, 4F, 6F PAGE DATA

1-2-1. INITIALIZATION OF 2F PAGE DATA

1. Initializing the 2F Page Data

Note: If the 2F page data has been initialized, the following adjustments need to be performed again.

1) Battery end adjustments

Adjusting page	2F
Adjusting Address	00 to 7F

Initializing Method:

1) Select page:00, address:01, and set data:01.
2) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
3) Click [Page] to display the INPUT PAGE screen, and input "2F".
4) Click [Preset Data Read] on the SEUS PAGE EDIT screen to display the INPUT SETID screen.
5) Input "04" and click [OK] to read the preset data.
6) On the SEUS PAGE EDIT screen, change the data of the "Fixed data-2" address shown in the following table by manual input.
   Note: New data for changing are not shown in the table because they are different in destination. When changing the data, copy the data built in the same model. If copy the data built in the different model, the camera may not operate.
7) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
8) Click [Write] to write the initializing data to the EEPROM of the camera.
9) Click [Close] to close the SEUS PAGE EDIT screen.

Processing after Completing Initializing of 2F Page data

Order	Page	Address	Data	Procedure
1	20	00	29	Write the data.
2	20	01	29	Write the data.
3				Check "Receive Paket Error" is displayed on the SEUS screen.
4				Turn on the power.
5				Click [Connect] on the SEUS screen.

2. 2F Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the 2F Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of 2F Page Data".)

Address	Initial value	Remark
00 to 20		
21	00	Test mode
22 to 49		Fixed data-1
4A	4E	Battery end adj.
4B	57	
4C	5F	
4D	63	
4E	63	
4F to 7F		Fixed data-1

Table. 6-1-2.

1-2-2. Initializing the 4F Page Data

1. Initializing the 4F Page Data

Note: If the 4F page data has been initialized, the following adjustments need to be performed again.
1) Video system adjustments
2) LCD system adjustments

Adjusting page	4F
Adjusting Address	00 to AF

Initializing Method:

1) Select page:00, address:01, and set data:01.
2) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
3) Click [Page] to display the INPUT PAGE screen, and input "4F".
4) Click [Preset Data Read] on the SEUS PAGE EDIT screen to display the INPUT SETID screen.
5) Input "04" and click [OK] to read the preset data.
6) On the SEUS PAGE EDIT screen, change the data of the "Fixed data-2" address shown in the following table by manual input.
   Note: New data for changing are not shown in the table because they are different in destination. When changing the data, copy the data built in the same model. If copy the data built in the different model, the camera may not operate.
7) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
8) Click [Write] to write the initializing data to the EEPROM of the camera.
9) Click [Close] to close the SEUS PAGE EDIT screen.

Processing after Completing Initializing of 4F Page data

Order	Page	Address	Data	Procedure
1	20	00	29	Write the data.
2	20	01	29	Write the data.
3				Check "Receive Paket Error" is displayed on the SEUS screen.
4				Turn on the power.
5				Click [Connect] on the SEUS screen.

2. 4F Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the 4F Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of 4F Page Data".)

Address	Initial value	Remark
00 to 7E		Fixed data-1
80	4E	Fixed data (LCD)
81	FF	
82	80	VCO adj. (LCD)
83	90	
84	6D	V COM adj. (LCD)
85	16	Bright adj. (LCD)
86	08	Fixed data (LCD)
87	87	V COM level adj. (LCD)
88	8D	White balance adj.
89	59	
8A	38	Contrast adj. (LCD)
8B	00	Fixed data (LCD)
8C to 91		Fixed data-1
92	05	Fixed data (LCD)
93	0C	
94	9F	
95	1F	
98 to 9F		Fixed data-1
A0	80	Video output level adj.
A1 to A2		Fixed data-1
A3	24	Fixed data (LCD)
A4	00	
A5 to AF		Fixed data-1

Table. 6-1-3.

1-2-3. Initializing the 6F Page Data

1. Initializing the 6F Page Data

Note: If the 6F page data has been initialized, the following adjustments need to be performed again.
1) Camera system adjustments

Adjusting page	6F
Adjusting Address	00 to FF

Initializing Method:

1) Select page:00, address:01, and set data:01.
2) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
3) Click [Page] to display the INPUT PAGE screen, and input "6F".
4) Click [Preset Data Read] on the SEUS PAGE EDIT screen to display the INPUT SETID screen.
5) Input "04" and click [OK] to read the preset data.
6) On the SEUS PAGE EDIT screen, change the data of the "Fixed data-2" address shown in the following table by manual input.
   Note: New data for changing are not shown in the table because they are different in destination. When changing the data, copy the data built in the same model. If copy the data built in the different model, the camera may not operate.
7) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
8) Click [Write] to write the initializing data to the EEPROM of the camera.
9) Click [Close] to close the SEUS PAGE EDIT screen.

Processing after Completing Initializing of 6F Page data

Order	Page	Address	Data	Procedure
1	20	00	29	Write the data.
2	20	01	29	Write the data.
3				Check "Receive Paket Error" is displayed on the SEUS screen.
4				Turn on the page.
5				Click [Connect] on the SEUS screen.

2. 6F Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the 6F Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of 6F Page Data".)

Address	Initial value	Remark
00 to 13	Fixed data-1	
10	FF	Auto focus illumination check
11	FF	
12	FF	
13	FF	
14	FF	
15	FF	
16	FF	
17	FF	
18	10	Flange back Adj.
19	00	
1A	10	
1B	00	
1C	10	
1D	1D	
1E	00	
1F	00	
20	00	
21	00	
22	00	
23	00	
24	20	
25	20	
26	00	
27	02	
28	03	
29	00	
2A	00	
2B	00	
2C	00	
2D	00	
2E	00	
2F	00	
30	00	
31	00	
32	00	
33	00	
34	00	
35	00	
36	00	
37	00	
38	00	
39	00	
3A	00	
3B	00	
3C	00	
3D	00	
3E	FF	
3F to 57	Fixed data-1	
58	5D	HALL adj.
59	8F	

6F page

Address	Initial value	Remark
5A	13	HALL adj.
5B	5B	
5C	75	
5D	5D	
5E to 5F		Fixed data-1
60	00	F No. standard data input
61	00	
62	00	
63	00	
64	00	
65	30	Light value adj.
66	FE	
67	6D	
68	68	HALL adj.
69 to 6A		Fixed data-1
6B	FF	HALL adj./F No. standard data input/
6C	00	Mechanical shutter adj.
6D	00	
6E to 6F		Fixed data-1
70	29	AWB 3200K standard data input
71	83	
72	1F	
73	DF	
74	29	
75	0C	
76	22	
77	6D	
78	00	
79	00	
7A	00	
7B	00	
7C	00	
7D	00	
7E	00	
7F	00	
80	00	
81	00	
82	00	
83	00	
84	00	
85	00	
86	00	
87	00	
88	19	AWB 5200K standard data input
89	66	
8A	30	
8B	6E	
8C	19	
8D	A7	
8E	32	
8F	FB	
90	00	
91	00	
92	00	
93	00	

Address	Initial value	Remark
94	00	AWB 5200K standard data input
95	00	
96	00	
97	00	
98	00	
99	00	
9A	00	
9B	00	
9C	00	
9D	00	
9E	00	
9F	00	
A0	28	
A1	C8	
A2	60	
A3	00	
A4	03	Color reproduction adj.
A5	E9	
A6	63	
A7	83	
A8	D5	
A9	FE	
AA	73	
AB	45	
AC	28	
AD	C8	
AE	60	
AF	00	
B0	00	AWB 3200K standard data input
B1	00	AWB 5800K standard data input
B2	00	AWB 3200K standard data input
B3	00	AWB 5800K standard data input
B4	00	AWB 3200K standard data input
B5		Fixed data-1
B6	28	Strobe adj.
B7	6E	
B8	10	Mechanical shutter adj.
B9	6B	
BA	0F	
BB	F6	
BC	0F	
BD	F7	
BE	0F	
BF	F2	
C0	0F	
C1	F7	
C2	00	
C3	00	
C4	00	
C5	00	
C6	00	
C7	30	
C8	1B	
C9	12	
CA	0D	

6F page

Address	Initial value	Remark
CB	08	Mechanical shutter adj.
CC	80	
CD	88	
CE	98	
CF	90	
D0	88	
D1	00	
D2	00	
D3	00	
D4	00	
D5	00	
D6	00	
D7	14	
D8	FF	Strobe adj.
D9	FF	
DA	FF	
DB	00	
DC	00	
DD	00	
DE	00	
DF	00	
E0	00	
E1	00	
E2	00	
E3	00	
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0 to FF	Fixed data-1	

Table. 6-1-4.

1-2-4. INITIALIZATION OF 0E PAGE DATA

1. Initializing the 0E Page Data

Adjusting page	0E
Adjusting Address	00 to FF

Initializing Method:

1) Select page:00, address:01, and set data:01.
2) Click [Page Edit] on the SEUS screen to display the SEUS PAGE EDIT screen.
3) Click [Page] to display the INPUT PAGE screen, and input "0E".
4) Click [Preset Data Read] on the SEUS PAGE EDIT screen to display the INPUT SETID screen.
5) Input "00" and click [OK] to read the preset data.
6) Click [Write] to write the initializing data to the EEPROM of the camera.
7) Click [Close] to close the SEUS PAGE EDIT screen.

Processing after Completing Initializing of 0E Page data

Order	Page	Address	Data	Procedure
1	20	00	29	Write the data.
2	20	01	29	Write the data.
3				Check "Receive Paket Error" is displayed on the SEUS screen.
4				Turn on the power.
5				Click [Connect] on the SEUS screen.

2. 0E Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the 0E Page Data".)

Address	Remark
F0 to FF	Fixed data-1

Table. 6-1-5.

COVER

1-3. VIDEO SYSTEM ADJUSTMENTS

1. Video Output Level Adjustment (SY-84 board)

Adjust the sync level of the composite video signal output.

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Video terminal of AV OUT jack (75 terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	4F
Adjustment Address	A0
Specified Value	Sync level: A=286 ± 5mV (NTSC mode) A=300 ± 5mV (PAL mode) Burst level: B=286 ± 30mV (NTSC mode) B=300 ± 30mV (PAL mode)

SETUP setting:

VIDEO OUT (SETUP 2) ..... NTSC (NTSC mode)
..... PAL (PAL mode)

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	60	C1		Read the data, and check it is “01”.
3	4F	02	03	Write the data.
4	40	F1	04	Write the data.
5	4F	A0		Change the data and set the sync level (A) to the specified value.
6	4F	A0		Write the data.
7				Check that the burst level (B) satisfies the specified value.
8	4F	02	00	Write the data.
9	40	F1	00	Write the data.
10	00	01	00	Set the data.

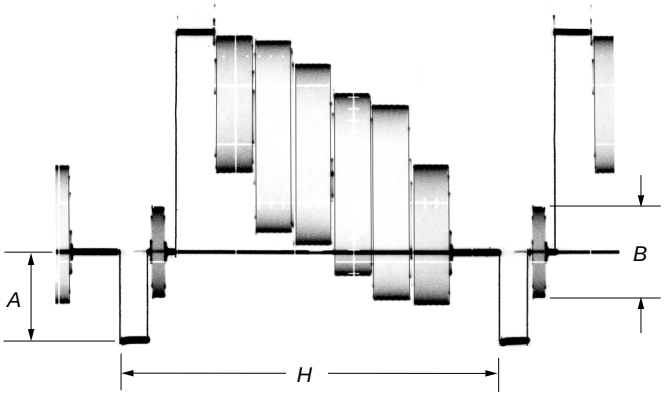


Fig.6-1-8.

COVER

1-4. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. Data Setting during Camera System Adjustments

Perform the following data setting before the camera system adjustments.

Note1: When the power is turned off, some data settings will be released. So perform this data setting again when the power is turned off.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	4F	0F	01	Write the data.
3	4F	02	02	Write the data.
4	2F	21	03	Set the data.
5	60	C1		Read the data, and check it is "02".
6	60	6C	01	Write the data.

After completing the camera system adjustments, release the data setting.

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	4F	0F	00	Write the data.
3	4F	02	00	Write the data.
4	2F	21	00	Write the data.
5	00	01	00	Set the data.
6				Initialize the 0E page data. (Note2)

Note2: Refer to "1-2-4. INITIALIZATION OF 0E PAGE DATA".

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Mode	STILL (📷)
Subject	Arbitrary
Measurement Point	Data of page 10, address: 07
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	58 to 5D, 68, 6B to 6D
Specified Value1	00
Specified Value2	12 to 1A
Specified Value3	7F to 87

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	00	01	01	Set the data.
3	60	01	6D	Write the data.
4				Wait for 1 sec.
5	60	02		Read the data, and check it is "01". (Note2)
6	60	01	00	Write the data.

Note2: The adjustment data will be automatically input to page: 6F, address: 58 to 5D, 68, 6B to 6D.

Checking method:

Order	Page	Address	Data	Procedure
1	6F	6B		Read the data, and check it satisfies the specified value 1.
2	60	01	01	Write the data.
3	10	07		Read the data, and check it satisfies the specified value 2.
4	60	01	00	Write the data.
5	60	01	03	Write the data.
6	10	07		Read the data, and check it satisfies the specified value 3.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

3. Flange Back Adjustment (Using Minipattern Box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Mode	STILL (📷)
Subject	Siemens star chart with ND filter for the minipattern box (Note1)
Measurement Point	Data of page: 6F, address: 24, 3E
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	18 to 3E
Specified value1	00
Specified value2	0A to 40

Note1: Dark siemens star chart.
Note2: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Preparations:

1) The minipattern box is installed as shown in the following figure.
   Note: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of the lens of the camcorder is less than 3cm.
3) Make the height of the minipattern box and the camcorder equal.
4) Check that the output voltage of the regulated power supply is the specified voltage.
5) Check that the center of the siemens star chart and center of the exposure screen coincide.

Specified voltage:

The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

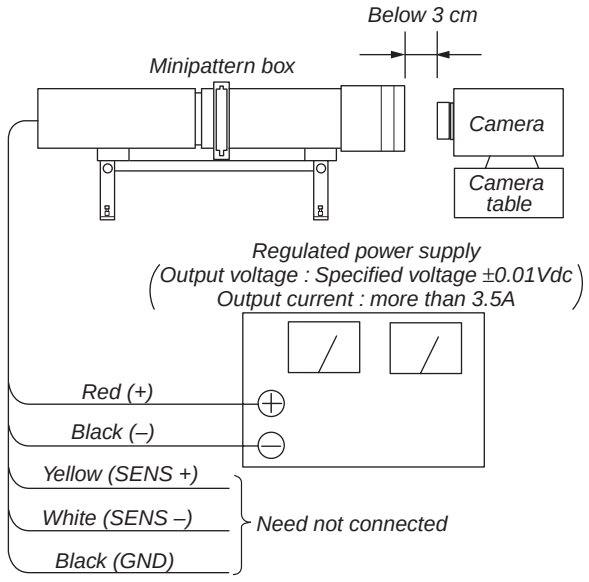


Fig.6-1-9.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	00	01	01	Set the data.
3	60	01	13	Write the data.
4	60	01	27	Write the data.
5				Wait until the movement of the lens stops.
6	60	02		Read the data, and check it is "01". (Note3)
7	6F	3E		Read the data, and check it satisfies the specified value 1.
8	6F	24		Read the data, and check it satisfies the specified value 2.

Note3: The adjustment data will be automatically input to page:6F, address: 18 to 3E

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				Click [Disconnect].
3				Tuen off the power turn on again.
4				Perform "Flange Back Check".
5				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

4. Flange Back Check

Mode	STILL (📷)
Subject	Siemens star (50cm from the front of the lens) (Luminance : approx. 300 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value	The lens is focused.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Checking method:

Order	Page	Address	Data	Procedure
1				Place the siemens star 50cm from the front of the lens.
2	60	90	00	Write the data.
3	60	91	00	Write the data.
4	60	92	00	Write the data.
5	60	93	B0	Write the data.
6	60	01	79	Write the data.
7				Wait until the movement of the lens stops.
8	60	07		Read the data, and check it is “01”.
9				Observe the TV monitor and check that the lens is focused.
10	60	01	00	Write the data.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2	60	90	00	Write the data.
3	60	91	00	Write the data.
4	60	92	00	Write the data.
5	60	93	00	Write the data.

5. Picture Frame Setting

Mode	STILL ( )
Subject	Color bar chart and clear chart (Standard picture frame) About 26 cm from the front of the lens
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=C=B/2, E=F

Switch setting:

CAMERA setting (Menu setting) ..... AUTO
IMAGE SIZE 3.1M

Setting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Shoot the color bar chart.
3				Adjust the direction and distance between the pattern box and camera, and set the picture frame to the specified position.
4				Remove the color bar chart and set the clear chart.
5				Check that the whole of the screen is white. If not, adjust the direction and distance slightly.
6	10	44		Read the data, and this data named YH.
7	10	45		Read the data, and this data named YL.
8	60	2C	01	Write the data.
9				Perform the following adjustments.

How to reset the focus when they deviated:

If the zoom and focus deviated due to some reason reset them in the following method.

Order	Page	Address	Data	Procedure
1	60	2C	01	Write the data.
2	60	90	00	Write the data.
3	60	91	00	Write the data.
4	60	92	YL	Write the data. Note
5	60	93	YH	Write the data. Note
6	60	01	79	Write the data.
7				Wait until the movement of the lens stops.
8	60	07		Read the data, and check it is "01".
9	60	01	00	Write the data.

Note: YH and YL are the data read in the "Setting method".

Check on an oscilloscope

1. Horizontal period

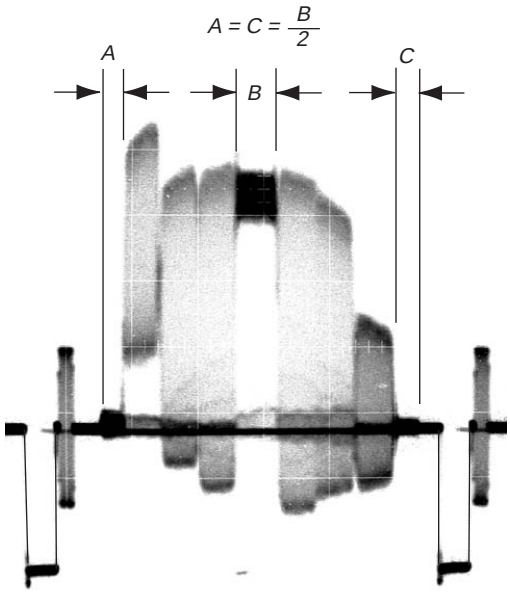


Fig. 6-1-10.

2. Vertical period

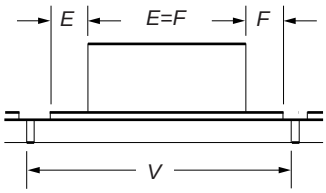


Fig. 6-1-11.

Check on the monitor TV (Underscanned mode)

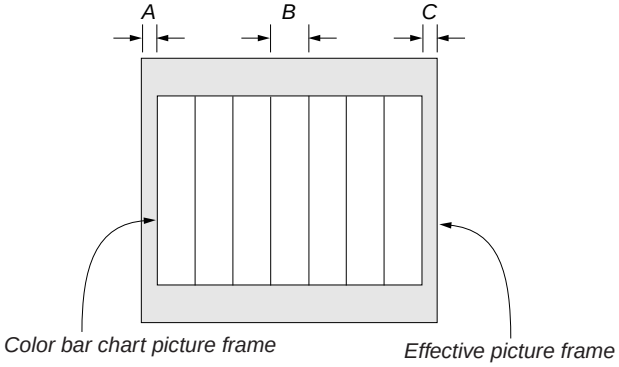


Fig. 6-1-12.

6. F No. Standard Data Input

Adjusted the dispersion of the iris to every to every F number, and compensate the exposure.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 6F, address: 6B
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	60 to 64, 6B to 6D
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
3	00	01	01	Set the data.
4	60	01	BB	Write the data.
5				Wait for 1 sec.
6	60	02		Red the data, and check it is "01". (Note2)
7	6F	6B		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 60 to 64, 6B to 6D.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

7. Mechanical Shutter Adjustment

Adjust the dispersion of the opening/closing time and the closing loss rate of the mechanical shutter. and compensate the exposure.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 6F, address: 6B
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	6B to 6D, B8 to D7
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
3	00	01	01	Set the data.
4	60	01	AD	Write the data.
5				Wait until the movement of the shutter stops.
6	60	02		Read the data, and check it is "01". (Note2)
7	6F	6B		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 6B to 6D, B8 to D7.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

8. Light Value Adjustment

Adjust the standard LV value.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 0C, 0D
Measuring Instrument	Data of page: 6F, address: 65
Adjustment Page	6F
Adjustment Address	65 to 67
Specified value1	0FE0 to 1020
Specified value2	2D to 58

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
3	00	01	01	Set the data.
4	60	01	0D	Write the data.
5				Wait for 1 sec.
6	60	02		Read the data, and check it is "01". (Note2)
7	10	0C		Read the data, and this data is named D_{0C}.
8	10	0D		Read the data, and this data is named D_{0D}.
9				Calculate D_{LV} using the following equation. (Hexadecimal calculation.) $D_{LV} = D_{0C} \times 100 + D_{0D}$
10				Check that D_{LV} satisfies the specified value1.
11	6F	65		Read the data, and check it satisfies the specified value2.

Note2: The adjustment data will be automatically input to page: 6F, address: 65 to 67.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

9. Auto White Balance 3200K Standard Data Input

Adjust the white balance standard data at 3200K.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 6F, address: B5
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	70 to 87, B0, B2, B4
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

ZOOM ..... WIDE end
CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Install the Clear chart.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "4. Picture Frame Setting".
4	00	01	01	Set the data.
5	6F	B5	FF	Write the data.
				3200K standard data input (1)
6	60	02		Read the data, and check it is "00".
7	60	37	01	Write the data.
8	60	01	11	Write the data.
9	60	38		Read the data, and check it is "01".
10	60	01	C1	Write the data.
11				Wait for 1 sec.
12	60	02		Read the data, and check it is "01". (Note2)
13	60	01	00	Write the data.
				3200K standard data input (2)
14	60	02		Read the data, and check it is "00".
15	60	37	02	Write the data.
16	60	01	0B	Write the data.
17				Wait for 3 sec.
18	60	02		Read the data, and check it is "01". (Note2)
19	60	01	00	Write the data.
20	6F	B5		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 70 to 87, B0, B2, B4.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	37	00	Write the data.
2	60	01	00	Write the data.
3				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

10. Auto White Balance 3200K Check

Check that the white balance standard data at 3200K are inputted properly.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 08, 09, 0A, 0B, 59, 5B
Measuring Instrument	Data of page: 6F, address: 74, 76, B5
Specified value 1	R ratio = 3F00 to 4100
Specified value 2	B ratio = 3F00 to 4100
Specified value 3	R-Y data = 7A to 86
Specified value 4	B-Y data = 7A to 86
Specified value 5	R/G data = 20 to 60
Specified value 6	B/G data = 10 to 40
Specified value 7	00

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

ZOOM ..... WIDE end
CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "4. Picture Frame Setting".
3	00	01	01	Set the data.
4	6F	B5	FF	Write the data.
				3200K standard data Check (1)
5	60	37	0D	Write the data.
6	60	01	11	Write the data.
7				Wait for 1 sec.
8	60	38		Read the data, and check it is "01".
9	60	01	C1	Write the data.
10				Wait for 1 sec.
11	60	02		Read the data, and check it is "01".
12	10	08		Read the data, and this data is named D_{08}.
13	10	09		Read the data, and this data is named D_{09}.
14				Calculate R ratio using the following equation (Hexadecimal calculation) R ratio = $D_{08} \times 100 + D_{09}$
15				Check that R ratio satisfies the specified value1.
16	10	0A		Read the data, and this data is named D_{0A}.
17	10	0B		Read the data, and this data is named D_{0B}.
18				Calculate B ratio using the following equation (Hexadecimal calculation) B ratio = $D_{0A} \times 100 + D_{0B}$
19				Check that B ratio satisfies the specified value2.
20	10	59		Read the data (R-Y data), and check it satisfies the specified value3.
21	10	5B		Read the data (B-Y data), and check it satisfies the specified value4.
22	60	01	00	Write the data.
				3200K standard data Check (2)
23	6F	74		Read the data (R/G data), and check it satisfies the specified value 5.
24	6F	76		Read the data (B/G data), and check it satisfies the specified value 6.
25	6F	B5		Read the data, and check it satisfies the specified value 7.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	37	00	Write the data.
2	60	01	00	Write the data.
3				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

11. Auto White Balance 5800K Standard Data Input

Adjust the white balance standard data at 5800K.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Data of page: 6F, address: B5
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	88 to A3, B1, B3
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter for color temperature correction on the lens.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
4	00	01	01	Set the data.
5	6F	B5	FF	Write the data.
6	6F	A0		Read the data, this data is named D_{A0}, and memorize it.
7	6F	A0	28	Write the data.
8	6F	A1		Read the data, this data is named D_{A1}, and memorize it.
9	6F	A1	C8	Write the data.
10	6F	A2		Read the data, this data is named D_{A2}, and memorize it.
11	6F	A2	60	Write the data.
12	6F	A3		Read the data, this data is named D_{A3}, and memorize it.
13	6F	A3	00	Write the data.
				5800K standard data input (1).
14	60	37	07	Write the data.
15	60	01	11	Write the data.
16	60	38		Read the data, and check it is "01".
17	60	01	C3	Write the data.
18				Wait for 1 sec.
19	60	02		Read the data, and check it is "01". (Note2)
20	60	01	00	Write the data.
				5800K standard data input (2).
21	60	37	08	Write the data.
22	60	01	A5	Write the data.
23				Wait for 2 sec.
24	60	02		Read the data, and check it is "01". (Note2)
25	60	01	00	Write the data.
26	6F	B5		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: 88 to A3, B1, B3.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	37	00	Write the data.
2	60	01	00	Write the data.
3				Perform next adjustments. If finish the camera system adjustments, perform "Processing after Completing Adjustments" of "12. Auto White Balance 5800K Check".

12. Auto White Balance 5800K Check

Check that the white balance standard data at 5800K are inputted properly.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Data of page: 10, address: 08, 09, 0A, 0B, 59, 5B
Measuring Instrument	Data of page: 6F, address: 8C, 8E, B5
Specified value 1	R ratio = 2838 to 2C38
Specified value 2	B ratio = 5DA0 to 61A0
Specified value 3	R-Y data = 70 to 90
Specified value 4	B-Y data = 70 to 90
Specified value 5	R/G data = 10 to 40
Specified value 6	B/G data = 10 to 40
Specified value 7	00

Note1: Before perform this adjustment, perform "Auto White Balance 5800K Standard Data Input".

Note2: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

ZOOM ..... WIDE end
CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter for color temperature correction on the lens.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "4. Picture Frame Setting".
4	00	01	01	Set the data.
5	6F	B5	FF	Write the data.
				5800K standard data Check (1).
6	60	37	13	Write the data.
7	60	01	11	Write the data.
8	60	38		Read the data, and check it is "01".
9	60	01	C3	Write the data.
10				Wait for 2 sec.
11	60	02		Read the data, and check it is "01".
12	10	08		Read the data, and this data is named D_{08}.
13	10	09		Read the data, and this data is named D_{09}.
14				Calculate R ratio using the following equation. (Hexadecimal calculation.) R ratio = $D_{08} \times 100 + D_{09}$
15				Check that R ratio satisfies the specified value1.
16	10	0A		Read the data, and this data is named D_{0A}.
17	10	0B		Read the data, and this data is named D_{0B}.
18				Calculate B ratio using the following equation. (Hexadecimal calculation.) B ratio = $D_{0A} \times 100 + D_{0B}$
19				Check that B ratio satisfies the specified value 2.
20	10	59		Read the data (R-Y data), and check it satisfies the specified value 3.
21	10	5B		Read the data (B-Y data), and check it satisfies the specified value 4.
22	60	01	00	Write the data.
				5800K standard data Check (2).
23	6F	8C		Read the data (R/G data), and check it satisfies the specified value 5.
24	6F	8E		Read the data (B/G data), and check it satisfies the specified value 6.
25	6F	B5		Read the data, and check it satisfies the specified value 7.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	37	00	Write the data.
2	60	01	00	Write the data.
3				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

13. CCD Linearity Check

Data picking is done to keep output linearity of the CCD imager, even if the input level of CCD imager changes.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Specified value1	97 to 103
Specified value2	97 to 103

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
3	00	01	01	Set the data.
4	75	09		Read the data, and memorize it.
5	75	09	04	Write the data.
6	60	1F	80	Write the data.
7	77	F7		Read the data, and memorize it.
8	77	F7	42	Write the data.
9	77	F2		Read the data, and memorize it.
10	77	F2	02	Write the data.
11	60	14	90	Write the data.
12	60	12	9F	Write the data.
13				Wait for 2 sec.
14	60	01	F9	Write the data.
15				Wait for 2 sec.
16	60	E1		Read the data, and check it is "08".
17	10	80		Read the data, and this data is named D_{80}.
18	10	81		Read the data, and this data is named D_{81}.
19				Calculate D_{RG} using the following equation (Hexadecimal calculation) $D_{RG0} = D_{80} \times 100 + D_{81}$
20	10	82		Read the data, and this data is named D_{82}.
21	10	83		Read the data, and this data is named D_{83}.
22				Calculate D_{BG} using the following equation (Hexadecimal calculation) $D_{BG0} = D_{82} \times 100 + D_{83}$
23	60	01	00	Write the data.
24	60	E1	00	Write the data.
25	77	72		Read the data, and memorize it.
26	77	72	32	Write the data.
27				Wait for 2 sec.
28	60	01	F9	Write the data.
29				Wait for 2 sec.
30	60	E1		Read the data, and check it is "08".
31	10	80		Read the data, and this data is named D_{80}.
32	10	81		Read the data, and this data is named D_{81}.
33				Calculate D_{RG} using the following equation (Hexadecimal calculation) $D_{RGH} = D_{80} \times 100 + D_{81}$
34	10	82		Read the data, and this data is named D_{82}.
35	10	83		Read the data, and this data is named D_{83}.
36				Calculate D_{BG} using the following equation (Hexadecimal calculation) $D_{BGH} = D_{82} \times 100 + D_{83}$
37	60	01	00	Write the data.
38	60	E1	00	Write the data.
39	77	72	0A	Write the data.
40				Wait for 2 sec.
41	60	01	F9	Write the data.
42				Wait for 2 sec.
43	60	E1		Read the data, and check it is "08".
44	10	80		Read the data, and this data is named D_{80}.
45	10	81		Read the data, and this data is named D_{81}.
46				Calculate D_{RG} using the following equation (Hexadecimal calculation) $D_{RGL} = D_{80} \times 100 + D_{81}$
47	10	82		Read the data, and this data is named D_{82}.
48	10	83		Read the data, and this data is named D_{83}.
49				Calculate D_{BG} using the following equation (Hexadecimal calculation) $D_{BGL} = D_{82} \times 100 + D_{83}$
50	60	01	00	Write the data.
51	60	E1	00	Write the data.
52				Convert D_{RG0}, D_{BG0}, D_{RGH}, D_{BGH}, D_{RGL} and D_{BGL} to decimal number, and obtain D_{RG0}', D_{BG0}', D_{RGH}', D_{BGH}', D_{RGL}' and D_{BGL}'.
53				Calculate R/G ratio (H), B/G ratio (H), R/G ratio (L) and B/G ratio (L), using the following equations (Decimal calculation) R/G ratio (H) = $(D_{RGH}' / D_{RG0}') \times 100$ B/G ratio (H) = $(D_{BGH}' / D_{BG0}') \times 100$ R/G ratio (L) = $(D_{RGL}' / D_{RG0}') \times 100$ B/G ratio (L) = $(D_{BGL}' / D_{BG0}') \times 100$

Order	Page	Address	Data	Procedure
54				Check that R/G ratio (H) satisfies the specified value 1. (Decimal number)
55				Check that B/G ratio (H) satisfies the specified value 1. (Decimal number)
56				Check that R/G ratio (L) satisfies the specified value 2. (Decimal number)
57				Check that B/G ratio (L) satisfies the specified value 2. (Decimal number)

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	12	00	Write the data.
2	60	14	00	Write the data.
3	60	1F	00	Write the data.
4	75	09		Write the data memorized at step 4.
5	77	F7		Write the data memorized at step 7.
6	77	F2		Write the data memorized at step 9.
7	77	72		Write the data memorized at step 25.
8				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

14. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Mode	STILL (📷)
Subject	Color bar chart (Standard picture frame)
Measurement Point	Data of page: 6F, address: B5
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	A4 to AF
Specified value	00

Note1: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

ZOOM ..... WIDE end
CAMERA setting (Menu setting) ..... AUTO
VIDEO OUT (SET UP setting) ..... NTSC

Adjusting method:

Order	Page	Address	Data	Procedure
1				Install the color bar chart.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "4. Picture Frame Setting".
4	00	01	01	Set the data.
5	6F	B5	FF	Write the data.
6	60	01	AB	Write the data.
7	60	12	80	Write the data.
8				Wait for 1 sec.
9	60	12	00	Write the data.
10				Wait for 2 sec.
11	60	01	A9	Write the data.
12				Wait until the color of the screen stops changing.
13	60	02		Read the data, and check it is "01". (Note2)
14	6F	B5		Read the data, and check it satisfies the specified value.

Note2: The adjustment data will be automatically input to page: 6F, address: A4 to AF.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

15. Color Reproduction Check

Check that the color reproduction adjustment is done properly.

Mode	STILL (📷)
Subject	Color bar chart (Standard picture frame)
Measurement Point	Video terminal of A/V OUT jack
Measuring Instrument	NTSC vectorscope
Specified Value	Each center of all color luminance points should settle within each color reproduction frame.

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

ZOOM ..... WIDE end
CAMERA setting (Menu setting) ..... AUTO
VIDEO OUT (SET UP setting) ..... NTSC

Checking method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "4. Picture Frame Setting".
3	00	01	01	Set the data.
4	60	01	AB	Write the data.
5	60	12	80	Write the data.
6				Wait for 1 sec.
7	60	12	00	Write the data.
8				Wait for 2 sec.
9				Adjust the GAIN and PHASE of the vectorscope so that the burst luminance point is set at the specified position.
10				Check that each center of all color luminance points is set in each color reproduction frame.

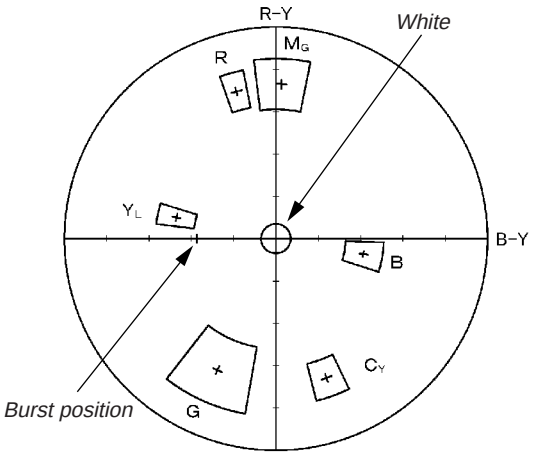


Fig. 6-1-13.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

16. CCD White Defect Compensation Check

The positions of the white defective pixel are detected, and check that the pixels can be corrected.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 60, address: 55
Measuring Instrument	
Specified value 1	00 to 7F
Specified value 2	00

Note: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Install the clear chart.
2				Check that "1. Data Setting during Camera System Adjustments" is performed.
3				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
4	00	01	01	Set the data.
5	7D	64	1E	Write the data.
6	7D	69	11	Write the data.
7	60	01	8B	Write the data.
8				Wait for 10 sec.
9	60	02		Read the data, and check it is "01".
10	60	55		Read the data, and check it satisfies the specified value 1.
11	60	01	00	Write the data.
12	7D	64	0F	Write the data.
13	7D	69	60	Write the data.
14	60	01	87	Write the data.
15				Wait for 5 sec.
16	60	02		Read the data, and check it is "01".
17	60	55		Read the data, and check it satisfies the specified value 2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2	7D	64	0F	Write the data.
3	7D	69	30	Write the data.
4				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

17. CCD Black Defect Compensation Check

The positions of the black defective pixel are detected, and check that the pixels can be corrected. And confirms that there is no trash in the surface of the CCD imager, the optical filter and the inside of the lens.

Mode	STILL (📷)
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 60, address: 55
Measuring Instrument	
Specified value 1	00 to 0A
Specified value 2	00

Note1: Check that there are no dust, no dirt and no reflection on the clear chart.

Note2: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2				Check the picture frame. If deviated, perform "5. Picture Frame Setting".
3	00	01	01	Set the data.
4	7D	65	4C	Write the data.
5	60	2C	01	Write the data.
6	60	90	00	Write the data.
7	60	91	03	Write the data.
8	60	92	00	Write the data.
9	60	93	00	Write the data.
10	60	01	79	Write the data.
11	60	30	08	Write the data.
12	60	07		Read the data, and check it is "01".
13				Check that the whole of the screen is white.
14	60	01	8D	Write the data.
15				Wait for about 30 sec.
16	60	02		Read the data, and check it is "01".
17	60	55		Read the data, and check it satisfies the specified value 1. If the data is "00", proceed to "Processing after Completing Adjustments".
18	60	01	00	Write the data.
19	7D	65	5A	Write the data.
20	60	01	89	Write the data.
21				Wait for about 15 sec.
22	60	02		Read the data, and check it is "01".
23	60	55		Read the data, and check it satisfies the specified value 2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2	60	2C	00	Write the data.
3	60	30	00	Write the data.
4	60	91	00	Write the data.
5	7D	65	4C	Write the data.
6				Perform next adjustments. If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

18. Strobe Adjustment

Adjust the light level and white balance when the strobe light flashes.

Mode	STILL (📷)
Subject	Background paper (J-2501-130-A) (50cm from the front of the lens)
Measurement Point	Data of page 6F, address: DC
Measuring Instrument	Data of page 10, address: 59, 5B
Adjustment Page	6F
Adjustment Address	B6, B7, D8 to EF
Specified Value1	03 to 0E
Specified Value2	7A to 86
Specified Value3	7A to 86
Specified Value4	00

Note1: Perform this adjustment in the dark room or use the flash adjustment box.
Note2: Any light other than the strobe light should not light up the paper.
Note3: After the power is turned on, this adjustment can be done only once.
Note4: If the data of page: 60, address: 02 is "01", select page: 60, address: 01, and write data: 00.

Switch setting:

FLASH ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that "1. Data Setting during Camera System Adjustments" is performed.
2	00	01	01	Set the data.
3	60	2C	01	Write the data.
4	60	92	FF	Write the data.
5	60	93	FF	Write the data.
6	60	6C	01	Write the data.
7	60	01	79	Write the data.
8				Wait until the movement of the lens stops.
9	60	07		Read the data, and check it is "01".
10	6F	B5	FF	Write the data.
11	60	01	B9	Write the data.
12				Check the flashing.
13	60	02		Read the data, and check it is "01". (Note5)
14	6F	D8		Read the data, and check it is "00".
15	60	01	00	Write the data.
16				Wait for 5 sec.
17	60	ED		Read the data, and check it is "02".
18	60	01	E7	Write the data.
19				Check the flashing.
20	60	02		Read the data, and check it is "01".
21	6F	D8		Read the data, and check it is "00".
22	6F	DC		Read the data, and check it satisfies the specified value 1.
23	10	59		Read the data, and check it satisfies the specified value 2.
24	10	5B		Read the data, and check it satisfies the specified value 3.
25	6F	B5	00	Read the data, and check.

Note5: The adjustment data will be automatically input to page: 6F, address: B6, B7, D8.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2	60	2C	00	Write the data.
3	60	6C	00	Write the data.
4	60	90	00	Write the data.
5	60	91	00	Write the data.
6	60	92	00	Write the data.
7	60	93	00	Write the data.
8				If finish the camera system adjustments, release the data setting. (See "1. Data Setting during Camera System Adjustments".)

19. Auto Focus Illumination Check

Check the auto focus illumination optical axis.

Mode	STILL (📷)
Subject	Background paper (J-2501-130-A). (50cm from the front of the lens)
Measurement Point	LCD screen or monitor TV
Measuring Instrument	(under scan)
Adjustment Page	6F
Adjustment Address	10 to 17
Specified Value1	Center of luminance point should settle within the specified frame.
Specified Value2	Date of page: 6F, address:10 is “00”.

Note1: Perform this adjustment in the dark room or use the flash adjustment box.
Note2: Any light other than the strobe light should not light up the paper.
Note3: If the data of page: 60, address: 02 is “01”, select page: 60, address: 01, and write data: 00.

Switch setting:

CAMERA setting (Menu setting) ..... AUTO

Preparations:

1) Take a copy of the AF illumination axis frame with a clear sheet. (Reduce or enlarge the frame in same size as the effective picture frame of the LCD screen or the monitor TV.)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that “1. Data Setting during Camera System Adjustments” is performed.
2	00	01	01	Set the data.
3	5F	3D		Read the data, and memorize it.
4	5F	3D		Decrease the data, and stop it when the black frame just appears on the LCD screen.
5				Attach the copied AF illumination axis frame (transparent) on the LCD screen. (The frame of the AF illumination axis frame and the black frame of the LCD screen must be agree.)
6	7B	A9	06	Set the data.
7	60	01	EF	Write the data.
8				Check that the auto focus illumination is lit.
9	60	02		Read the data, and check it is “01”. (Note4)
10				Check that center of the luminance point is set in the specified frame of the AF illumination axis frame.
11	6F	10		Read the data, and check it satisfies the specified value 2.

Note4: The adjustment data will be automatically input to page: 6F, address: 10 to 17.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	60	01	00	Write the data.
2	5F	3D		Write the data memorized at step 3.
3				If finish the camera system adjustments, release the data setting. (See “1. Data Setting during Camera System Adjustments”.)

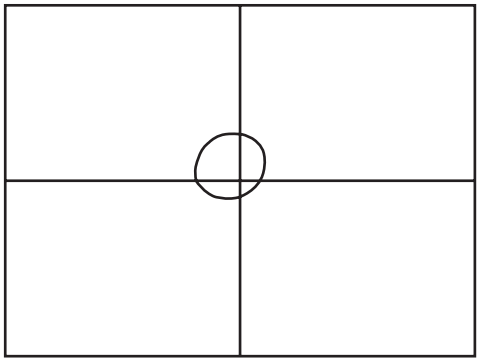


Fig. 6-1-14.

COVER

1-5. LCD SYSTEM ADJUSTMENT

Note: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

SETUP setting:

LCD BRIGHTNESS (SETUP1) ..... NORMAL
LCD BACKLIGHT (SETUP1) ..... BRIGHT
VIDEO OUT (SETUP2) ..... NTSC
(Adjustments must be performed in NTSC mode, so don't set the setup setting to "PAL".)

[Measuring points]

The measuring points when using the oscilloscope or the digital voltmeter are CL802 (Pin ㉒ of IC801 (VG)) and CL803 (Pin ㉗ of IC801) of SY-84 board.

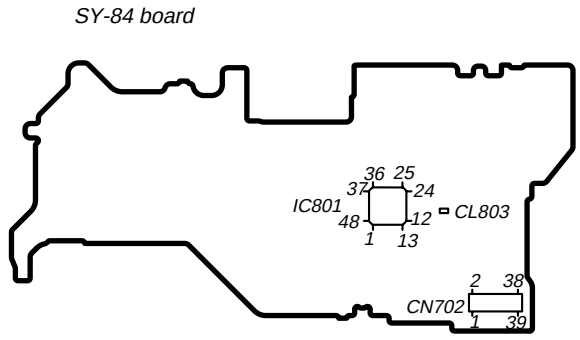


Fig. 6-1-15.

1. LCD Initial Data Input (1)

Mode	PLAY (▶)
Signal	Arbitrary
Adjustment Page	4F
Adjustment Address	80 to 8B, 92 to 95, A3, A4

Adjusting method:

1) Select page: 00, address: 01, and set data: 01.
2) Select page: 4F, and write the data in the following table.
3) Select page: 00, address: 01, and set data: 00.

Address	Data	Remark
80	4E	Fixed data
81	FF	Fixed data
82	80	VCO adj.
83	90	VCO adj.
84	6D	V COM adj.
85	16	Bright adj.
86	08	Fixed data
87	87	P sig level adj.
88	8D	White balance adj.
89	59	White balance adj.
8A	38	Contrast adj.
8B	00	VG center adj.
92	05	Fixed data
93	0C	Fixed data
94	9F	Fixed data
95	1F	Fixed data
A3	24	Fixed data
A4	00	Fixed data

2. LCD Initial Data Input (2)

Mode	PLAY (▶)
Signal	Arbitrary
Adjustment Page	5F
Adjustment Address	3A to 3F

Adjusting method:

1) Select page: 00, address: 01, and set data: 01.
2) Select page: 5F, and write the data in the following table.
3) Select page: 00, address: 01, and set data: 00.

Address	Data	Remark
3A	57	Fixed data
3B	FE	Fixed data
3C	02	Fixed data
3D	5A	Fixed data
3E	00	Fixed data
3F	01	Fixed data

3. VCO Adjustment (SY-84 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	82, 83

Setup setting:

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	09	Write the data.
3	4F	02	03	Write the data.
4	4F	82	80	Write the data.
5	4F	82		Increase the data, and stop it when the LCD screen just begins to fall into the disorder.
6	4F	82		Read the data, and this data is named D_H.
7	4F	82	80	Write the data.
8	4F	82		Decrease the data, and stop it when the LCD screen just begins to fall into the disorder.
9	4F	82		Read the data, and this data is named D_L.
10				Calculate D_{82} using following equation. (Hexadecimal calculation.) $D_{82} = (D_H + D_L)/2$
11	4F	82	D_{82}	Write the data.
12				Calculate D_{83} using following equation. (Hexadecimal calculation.) $D_{83} = D_{82} + 16$
13	4F	83	D_{83}	Write the data.
14	4F	02	00	Write the data.
15	40	F1	00	Write the data.
16	00	01	00	Set the data.

4. Bright Adjustment (SY-84 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Note: Do either of "Adjustment without Using Oscilloscope" or "Adjustment Using Oscilloscope".

4-1. Adjustment without Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Data of page: 40, address: 11, 12
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	85
Specified Value	0D7 to 0DF

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	08	Write the data.
3	4F	02	03	Write the data.
4	40	10	00	Write the data.
5	40	10	90	Write the data.
6	40	11		Read the data, and this data is named D_{11A}.
7	40	12		Read the data, and this data is named D_{12A}.
8	40	10	91	Write the data.
9	40	11		Read the data, and this data is named D_{11B}.
10	40	12		Read the data, and this data is named D_{12B}.
11				Calculate D_A and D_B using following equation. (Hexadecimal calculation.) (Note1) $D_A = (D_{11A} \times 4 + D_{12A} / 40)$ $D_B = (D_{11B} \times 4 + D_{12B} / 40)$
12				Calculate the signal level using following equation. (Hexadecimal calculation.) When $D_A \geqq D_B$ Signal level = $D_A - D_B$ When $D_A < D_B$ Signal level = $D_B - D_A$
13				When the signal level satisfies the specified value proceed to step 16, in case of others proceed to step 14.
14	4F	85		Change the data. (Note2)
15	4F	85		Write the data, and return to step 4.
16	4F	02	00	Write the data.
17	40	F1	00	Write the data.
18	00	01	00	Set the data.

Note1: When dividing D_{12A} or D_{12B} by 40. If there is a fraction below decimal point, truncate it.

Note2: When the signal level is smaller than specified value, increase the data.

4-2. Adjustment Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	CL802 (Pin ㉒ of IC801) (VG)
Measuring Instrument	Oscilloscope
Adjustment Page	4F
Adjustment Address	85
Specified Value	A = 2.95 ± 0.05V

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	08	Write the data.
3	4F	02	03	Write the data.
4	4F	85		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
5	4F	85		Write the data.
6	4F	02	00	Write the data.
7	40	F1	00	Write the data.
8	00	01	00	Set the data.

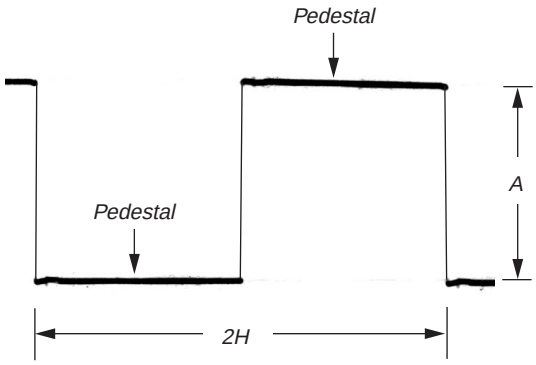


Fig. 6-1-16.

5. Contrast Adjustment (SY-84 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Note: Do either of "Adjustment without Using Oscilloscope" or "Adjustment Using Oscilloscope".

5-1. Adjustment without Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Data of page: 40, address: 11, 12
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	8A
Specified Value	0B0 to 0B8

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	01	Write the data.
3	4F	02	03	Write the data.
4	40	10	00	Write the data.
5	40	10	90	Write the data.
6	40	11		Read the data, and this data is named D_{11A}.
7	40	12		Read the data, and this data is named D_{12A}.
8	40	10	91	Write the data.
9	40	11		Read the data, and this data is named D_{11B}.
10	40	12		Read the data, and this data is named D_{12B}.
11				Calculate D_A and D_B using following equation. (Hexadecimal calculation.) (Note1) $D_A = (D_{11A} \times 4 + D_{12A} / 40)$ $D_B = (D_{11B} \times 4 + D_{12B} / 40)$
12				Calculate the signal level using following equation. (Hexadecimal calculation.) When $D_A \geqq D_B$ Signal level = $D_A - D_B$ When $D_A < D_B$ Signal level = $D_B - D_A$
13				When the signal level satisfies the specified value proceed to step 16, in case of others proceed to step 14.
14	4F	8A		Change the data. (Note2)
15	4F	8A		Write the data, and return to step 4.
16	4F	02	00	Write the data.
17	40	F1	00	Write the data.
18	00	01	00	Set the data.

Note1: When dividing D_{12A} or D_{12B} by 40. If there is a fraction below decimal point, truncate it.

Note2: When the signal level is smaller than specified value, increase the data.

5-2. Adjustment Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	CL802 (Pin ㉒ of IC801) (VG)
Measuring Instrument	Oscilloscope
Adjustment Page	4F
Adjustment Address	8A
Specified Value	A = 2.70 ± 0.05V

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	01	Write the data.
3	4F	02	03	Write the data.
4	4F	8A		Change the data and set the voltage (A) to the specified value.
5	4F	8A		Write the data.
6	4F	02	00	Write the data.
7	40	F1	00	Write the data.
8	00	01	00	Set the data.

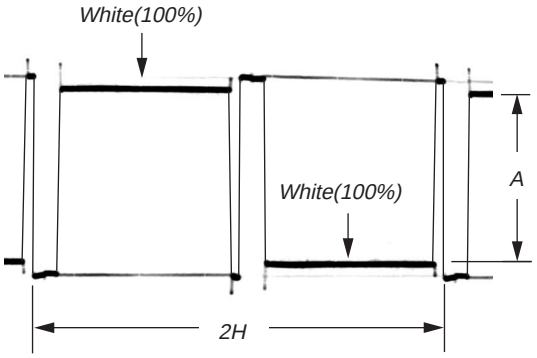


Fig. 6-1-17.

6. V COM Level Adjustment (SY-84 board)

Set the V COM signal level to an appropriate level.

Note: Do either of "Adjustment without Using Oscilloscope" or "Adjustment Using Oscilloscope".

6-1. Adjustment without Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Data of page: 40, address: 11, 12
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	87
Specified Value	1A0 to 1A8

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	02	Write the data.
3	4F	02	03	Write the data.
4	40	10	00	Write the data.
5	40	10	80	Write the data.
6	40	11		Read the data, and this data is named D_{11A}.
7	40	12		Read the data, and this data is named D_{12A}.
8	40	10	81	Write the data.
9	40	11		Read the data, and this data is named D_{11B}.
10	40	12		Read the data, and this data is named D_{12B}.
11				Calculate D_A and D_B using following equation. (Hexadecimal calculation.) (Note1) $D_A = (D_{11A} \times 4 + D_{12A} / 40)$ $D_B = (D_{11B} \times 4 + D_{12B} / 40)$
12				Calculate the signal level using following equation. (Hexadecimal calculation.) When $D_A \leqq D_B$ Signal level = $D_A - D_B$ When $D_A < D_B$ Signal level = $D_B - D_A$
13				When the signal level satisfies the specified value proceed to step 16, in case of others proceed to step 14.
14	4F	87		Change the data. (Note2)
15	4F	87		Write the data, and return to step 4.
16	4F	02	00	Write the data.
17	40	F1	00	Write the data.
18	00	01	00	Set the data.

Note1: When dividing D_{12A} or D_{12B} by 40. If there is a fraction below decimal point, truncate it.

Note2: When the signal level is smaller than specified value, increase the data.

6-2. Adjustment Using Oscilloscope

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	CL803 (Pin ㉗ of IC801) (VCOM)
Measuring Instrument	Oscilloscope
Adjustment Page	4F
Adjustment Address	87
Specified Value	A = 5.65 ± 0.05V

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	02	Write the data.
3	4F	02	03	Write the data.
4	4F	87		Change the data and set the signal level (A) to the specified value.
5	4F	87		Write the data.
6	4F	02	00	Write the data.
7	40	F1	00	Write the data.
8	00	01	00	Set the data.

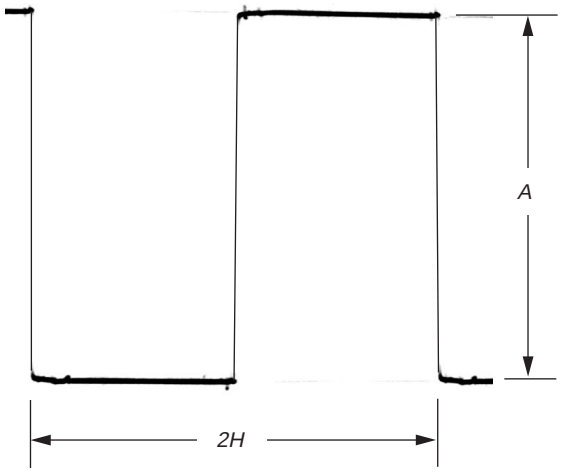


Fig. 6-1-18.

7. V COM Adjustment (SY-84 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	PLAY (▶)
Signal	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	84
Specified Value	The brightness difference between the section A and section B is minimum.

Note: Perform "Bright Adjustment" and "Contrast Adjustment" before this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	82	Write the data.
3	4F	02	03	Write the data.
4	4F	84		Change the data so that the brightness of the section A and that of the section B is equal.
5	4F	84		Write the data.
6	4F	02	00	Write the data.
7	40	F1	00	Write the data.
8	00	01	00	Set the data.

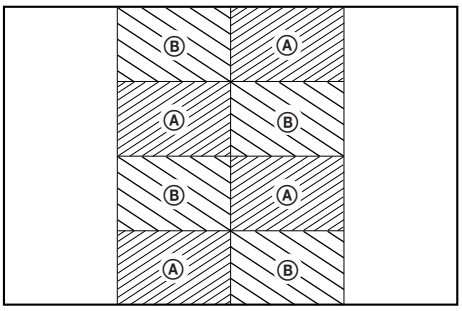


Fig. 6-1-19.

8. White Balance Adjustment (SY-84 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	PLAY (▶)
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	88, 89
Specified Value	The LCD screen should not be colored.

Note1: Use the AC power adaptor during this adjustment.
Note2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC801

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2	40	F1	0A	Write the data.
3	4F	02	03	Write the data.
4	4F	88	8D	Write the data.
5	4F	89	59	Write the data.
6	4F	88		Check that the LCD screen is not colored. If not colored, proceed to step 12.
7	4F	88		Change the data so that the LCD screen is not colored.
8	4F	88		Write the data.
9	4F	89		Change the data so that the LCD screen is not colored.
10	4F	89		Write the data.
11	4F	89		If the LCD screen is colored, repeat steps 7 to 11.
12	4F	02	00	Write the data.
13	40	F1	00	Write the data.
14	00	01	00	Set the data.

COVER

1-6. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Battery End Adjustment (SY-84 board)

Check the battery end voltage.

Mode	STILL (📷)
Subject	Arbitrary
Measurement Point	Data of page: 20, address: 9B
Measuring Instrument	
Adjustment Page	2F
Adjustment Address	4A to 4E

Switch setting:

FOCUS (Menu setting) 0.5m

Connection:

1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 6-1-20.

Preparations:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 4.2 ± 0.1Vdc.

Adjusting method:

Order	Page	Address	Data	Procedure
1	00	01	01	Set the data.
2				Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 1.80 ± 0.01V.
3	20	9B		Read the data, and this data is named Dref.
4	2F	4A	Dref	Write the data.
5				Calculate D_{4B}, D_{4C}, D_{4D} and D_{4E} using following equations. (Hexadecimal calculation.) D_{4B} = Dref + 09 D_{4C} = Dref + 11 D_{4D} = Dref + 15 D_{4E} = Dref + 15
6	2F	4B	D_{4B}	Write the data.
7	2F	4C	D_{4C}	Write the data.
8	2F	4D	D_{4D}	Write the data.
9	2F	4E	D_{4E}	Write the data.
10	00	01	00	Set the data.

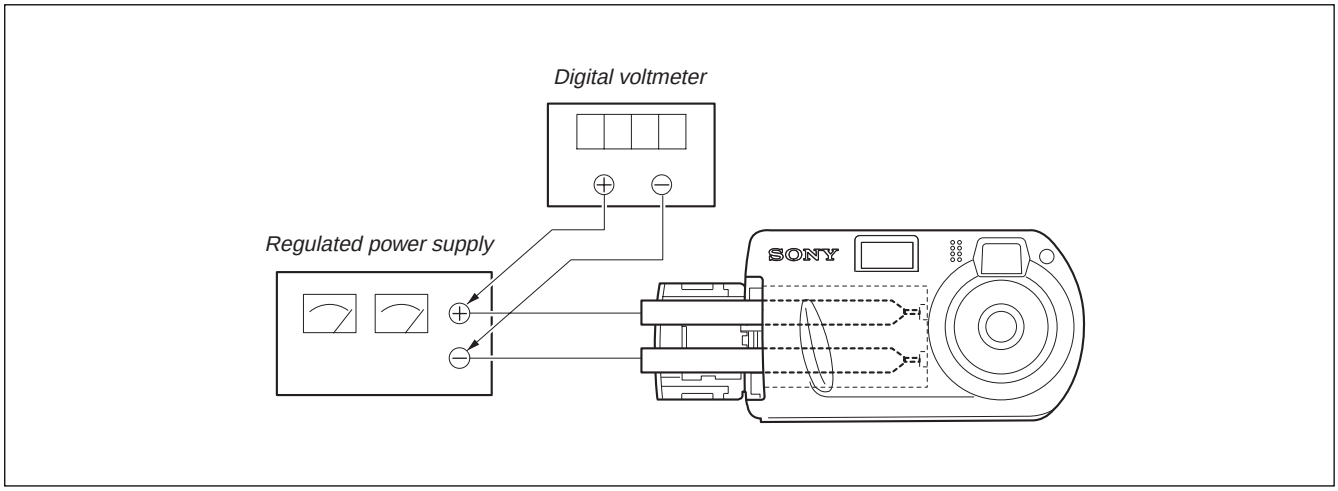


Fig. 6-1-20.

COVER

6-2. SERVICE MODE

2-1. APPLICATION FOR ADJUSTMENT (SEUS)

The application for adjustment (SEUS) is used for changing the calculation coefficient in signal processing, EVR data, etc. The SEUS performs bi-directional communication between the personal computer (PC) and the unit using the USB signal. The resultant data of this bi-directional communication is written in the non-volatile memory.

2-1-1. Using Method of SEUS

1. Connection

1) Connect the HASP key to the USB port of the PC.
2) Connect the camera to another USB port of the PC.
3) Insert a memory stick to the camera.
4) Confirm that the camera starts in the USB mode.
5) Start the SEUS on the PC.
6) Click [Connect] on the SEUS screen. If the connection is normal, the SEUS screen will be as shown in Fig. 6-2-1, indicating the “connected” state.

Note: The SEUS will go in “disconnect” state, if the camera is turned off (for instance, by resetting the unit). In such a case, click [Connect] on the SEUS screen to restore the “connected” state.

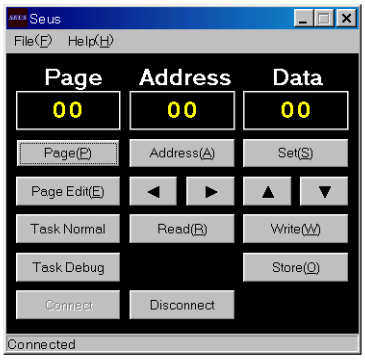


Fig. 6-2-1.

2. Operation

- **Page change**
  To change the page, click [Page] on the SEUS screen and enter the page to be changed. The page is displayed in hexadecimal notation.

- **Address change**
  To change the address, click [Address] on the SEUS screen and enter the address to be changed. Or click [▶] to increase the address, click [◀] to decrease the address. The address is displayed in hexadecimal notation.

- **Data change**
  To change the data, click [Set] on the SEUS screen and enter the data. Or click [▲] to increase the data, click [▼] to decrease the data. The data is displayed in hexadecimal notation.
  This operation does not write the data to the nonvolatile memory. If you want to write the changed data, click [Store] to write it.

- **Data writing**
  To write the data to the nonvolatile memory, click [Write] on the SEUS screen and enter the data to be written.

- **Data reading**
  The data displayed on the SEUS screen are the data values at the time when the pages and addresses were set, and they are not updated automatically. To check the data change, click [Read] on the SEUS screen and update the displayed data.

2-1-2. Precaution on Use of SEUS

Mishandling of the SEUS may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be saved before beginning adjustments.

1) Click [Page Edit] on the SEUS screen.
2) Click [Page], and enter the page number to be saved.
3) Click [Read] to read the data to be saved from the camera.
4) Click [File] and save the data.

COVER

2-2. SERVICE MODE

1. Setting the Test Mode

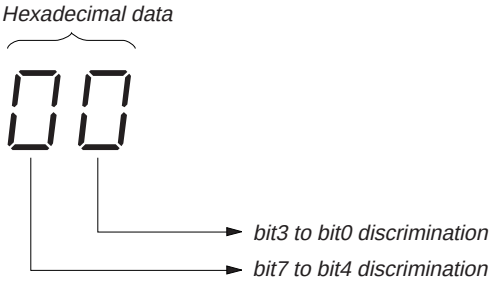
Page 2F	Address 21

Data	Function
00	Normal
02	Forced MOVIE mode power ON
03	Forced STILL mode power ON
04	Forced PLAY mode power ON

- Before setting the data, select page: 00, address: 01, and set data: 01.
- For page 2F, the data set is recorded in the non-volatile memory by clicking [Write] button. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, be sure to return the data of this address to “00”, and press [Write] button.
  Select page: 00, address: 01, and set data: 00.

2. Bit value discrimination

Bit values must be discriminated using the hexadecimal data for following items. Use the table below to discriminate if the bit value is “1” or “0”.



	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

Examples: If the hexadecimal data is “8E”, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

3. Switch check (1)

Page 20	Address 80

Bit	Function	When bit value=1	When bit value=0
0	POWER switch (XPWER ON) (Control switch block (RL-059) S002)	OFF	ON
1			
2			
3	Shutter button (XSHTR ON SW) (Control switch block (RL-059) S003)	OFF	ON
4	Shutter button (XAE LOCK SW) (Control switch block (RL-059) S003)	OFF	ON

Using method:

1) Select page: 20, address: 80.
2) Read the data. By discriminating the bit value of the data, the state of the switches can be discriminated.

4. Switch check (2)

Page 20	Address 90 to 92, 94

Using method:

1) Select page: 20, address: 90 to 92, 94.
2) Read the data. By discriminating the data, the pressed key can be discriminated.

Address	Data				
	00 to 0C	0D to 27	28 to 48	49 to 73	D0 to FF
90 (MODE DIAL1) (IC401 ⑭)	Mode dial SET UP (SW-390 block)	Mode dial MOVIE (SW-390 block)	Mode dial STILL (SW-390 block)	Mode dial PLAY (SW-390 block)	No key input
91 (KEY AD0) (IC401 ⑮)	Control button DOWN (S104) (SW-390 block)	Control button UP (S100) (SW-390 block)	MENU (S107) (SW-390 block)	IMAGE SIZE/ DELETE (S110) (SW-390 block)	No key input
92 (KEY AD1) (IC401 ⑯)	Control button RIGHT (S105) (SW-390 block)	Control button LEFT (S101) (SW-390 block)	Control button SET (S103) (SW-390 block)	LCD STATUS/ LCD ON-OFF (S108) (SW-390 block)	No key input
94 (KEY AD2) (IC401 ⑱)	ZOOM WIDE (S102) (SW-390 block)	ZOOM WIDE (S106) (SW-390 block)			No key input

5. LED check

Page 20	Address 04

Using method:

1) Select page: 20, address: 04, set data: 02.
2) Check that all LED (TALLY/ACCESS LED, AE LOCK/FLASH LED, STROB/CHARGE LED, MS LED) are lit.
3) Select page: 20, address: 04, set data: 00.

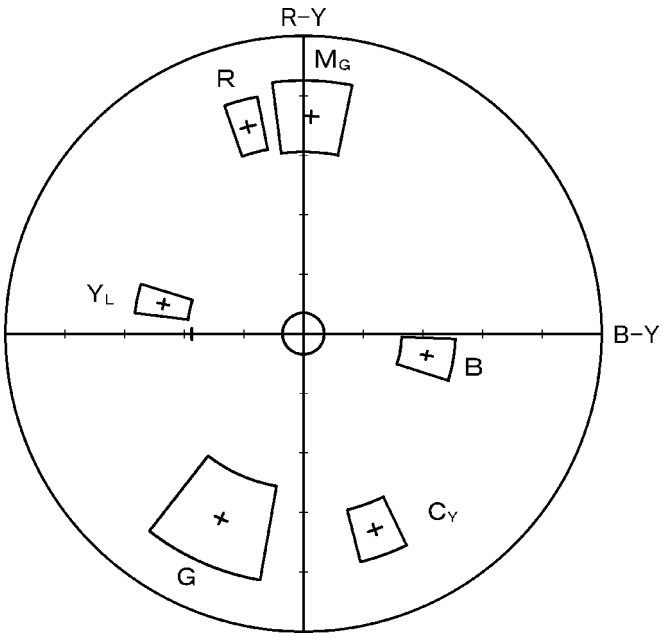
6. Lens Shutter check

Page 60	Address 5B, 5C

Using method:

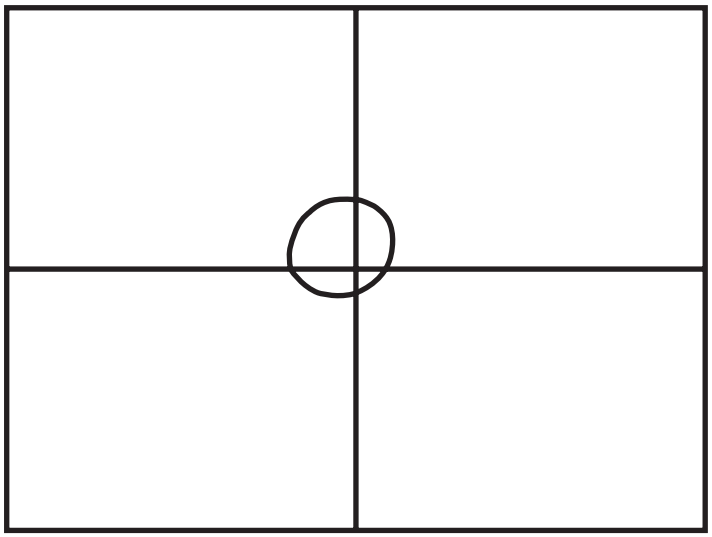
1) Select page: 60, address: 5B, and write data: 01.
2) Check that the lens shutter is closed. Select page: 60, address: 5C, and check the data is “01”.
3) Select page: 60, address: 5B, and write data: 02.
4) Check that the lens shutter is open. Select page: 60, address: 5C, and check the data is “02”.
5) Select page: 60, address: 5B, and write data: 00.

〈FOR CAMERA COLOR REPRODUCTION ADJUSTMENT〉



Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

〈AF ILLUMINATION FRAME〉



Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.02	Official Release	—	—

DSC-P32

SONY

LEVEL 2

SERVICE MANUAL

Ver 1.1 2003. 03

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Brazilian Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

SUPPLEMENT-1

File this supplement with the Service Manual.
(PV02-017)

Subject:
Addition of the Brazilian Model.

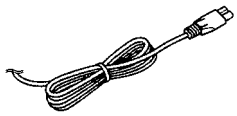
SECTION 5 REPAIR PARTS LIST
5-2. ELECTRICAL PARTS LIST

(Page 5-14E)

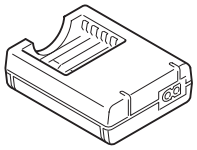
Checking supplied accessories.

☞ : Added portion.

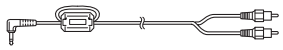
Make sure that the following accessories are supplied with your camcorder.



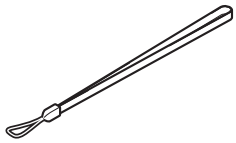
Power cord (1)(AUS model)
⚠ 1-696-819-21
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-779-985-11



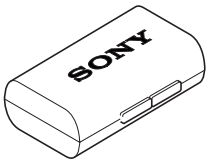
Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS,BR model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-32



Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

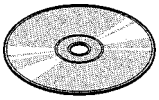


Hand strap (1)
3-070-841-01

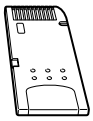


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

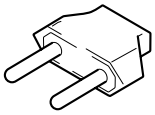


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,BR, CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

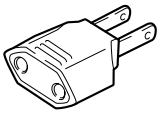


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

• Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	BR	: Brazilian model
CH	: Chinese model	J	: Japanese model

Other accessories

3-080-876-02 MANUAL, INSTRUCTION (OUYOU)(JAPANESE)(J) ☞
3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH) (US,CND,AEP,UK,E,HK,AUS,CH,JE)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP,JE)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)
3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP,JE)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR,JE)

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

2003C1600-1
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Published by DI Customer Center

DSC-P32

SONY

LEVEL 2

SERVICE MANUAL

Ver 1.2 2005. 09

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

SUPPLEMENT-2

File this supplement-2 with the service manual.
(PV05-051)

- Addition of SERVICE NOTE
  (Notice for CCD BLOCK ASSY replacement)
- Change of repair parts list

[Cause]
CCD BLOCK ASSY was changed from A-7013-723-A to A-7095-744-A.

Each CCD BLOCK ASSY has different specifications, so that when replacing CCD BLOCK ASSY or SY-84 board, perform as below.

2005I1600-1
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SECTION 1 SERVICE NOTE

• NOTICE FOR CCD BLOCK ASSY REPLACEMENT

[Remedy]

1. Confirm the resistor value of board.
   SY-84 board (R356)

2. The repair method is different according to the register value of board.

(1) When the register value is 470KΩ.
   It is not necessary to change the register value/data.

(2) When the register value is 1MΩ.

1) Change the register value of board to 470kΩ.
   SY-84 board (R356) 1-218-989-11 (1MΩ) ⇨ 1-218-985-11 (470KΩ)
2) Change data too as follows.

		1MΩ		470KΩ
Page	Address	Data		Data
79	0C	90		92
79	10	27		40
79	11	D8	⇨	00
77	70	0E		10
6F	04	04		11

SECTION 5 REPAIR PARTS LIST

5-1. EXPLODED VIEWS

: Changed portion

Page	Before change			After change		
5-5	**5-1-3. LENS FRAME BLOCK ASSEMBLY**					
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	IC351	A-7013-723-A	CCD BLOCK ASSY (CCD IMAGER)	IC351	A-7095-744-A	CCD BLOCK ASSY (CCD IMAGER)

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SERVICE MANUAL

LEVEL 2

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Revision History

US Model
Canadian Model
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UK Model
E Model
Australian Model
Hong Kong Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL 1 (987622841.pdf).
- Reference No. search on printed wiring boards is available.

On the SY-84 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the SY-84 board.

Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the SY-84 board are not shown.

The following pages are not shown.

Schematic diagram ..... Pages 4-7 to 4-26
Printed wiring board ..... Pages 4-39 to 4-42
Waveforms ..... Pages 4-45 to 4-46
Mounted parts location ..... Page 4-48
Electrical parts list ..... Pages 5-7 to 5-12

DIGITAL STILL CAMERA

SONY®

DSC-P32

COVER

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

MEMORY STICK

SPECIFICATIONS

■ Camera

[System]

Image device 6.67 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera
Approx. 3 340 000 pixels

Effective pixels number of camera
Approx. 3 210 000 pixels

Lens Single focal lens
f=5.0 mm
(35 mm camera conversion: 33 mm ($1\ ^{5}/_{16}$ inches))
F2.8

Exposure control
Automatic, Program, Twilight, Twilight portrait, Landscape, Snow, Beach

White balance Automatic, Daylight, Cloudy, Fluorescent, Incandescent

File format (DCF compliant)
Still images: Exif Ver. 2.2, JPEG compliant, GIF (for Clip Motion), DPOF compatible
Audio with still image: MPEG1 compliant (Monaural)
Movies: MPEG1 compliant (Monaural)

Recording media
"Memory Stick"

Flash Recommended distance
0.5 to 3.8 m ($19\ ^{3}/_{4}$ inches to 12 feet $5\ ^{19}/_{32}$ inches)
(when ISO sensitivity is set to Auto)

[Output connectors]

A/V OUT (MONO) jack (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance 2.2 kΩ

USB jack mini-B

[LCD screen]

LCD panel used
4.0 cm (1.6 type) TFT drive

Total number of dots
61 600 (280×220) dots

[Power, general]

Power AA nickel hydride batteries (2)
2.4 V
AC-LS5 AC Adaptor (not supplied), 4.2 V

Power consumption (when recording)
1.7W

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $101.3 \times 57.7 \times 32.6$ mm ($4 \times 2\ ^{3}/_{8} \times 1\ ^{5}/_{16}$ inches)
(W/H/D, protruding portions not included)

Mass Approx. 217 g (7.7 oz) (two batteries, "Memory Stick" and wrist strap included)

Microphone Electret condenser microphone

Speaker Dynamic speaker

■ BC-CS2A/CS2B Ni-MH battery charger

Power requirements
AC 100 to 240V 50/60Hz
3 W

Output voltage
AA : DC 1.4 V 400 mA × 2
AAA : DC 1.4 V 160 mA × 2

Operating temperature range
0° to +40°C (32° to +104°F)

Dimensions $71 \times 30 \times 91$ mm ($2\ ^{7}/_{8} \times 1\ ^{3}/_{16} \times 3\ ^{5}/_{8}$ inches) (W/H/D)

Mass Approx. 90 g (3 oz)

■ AC-LS5 AC Adaptor (not supplied)

Power requirements
AC 100 to 240 V, 50/60 Hz
11 W 0.16 to 0.09 A

Rated output voltage
DC 4.2 V, 1.5 A

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions $48 \times 29 \times 81$ mm ($1\ ^{15}/_{16} \times 1\ ^{3}/_{16}$ $3\ ^{1}/_{4}$ inches) (W/H/D, protruding parts not included)

Mass Approx. 180 g (6 oz)
(adaptor only)

Accessories

HR6 (size AA) Ni-MH batteries (2)
Battery case
BC-CS2A/CS2B Ni-MH Battery charger (1)
Power cord (mains lead) (1)
USB cable (1)
A/V connecting cable (1)
Wrist strap (1)
"Memory Stick" (16MB) (1)
CD-ROM (USB driver: SPVD-010) (1)
Operating Instructions (1)

Design and specifications are subject to change without notice.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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Printed wiring board of the SY-84 board are not shown.
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Waveforms of the SY-84 board are not shown.
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Mounted parts location of the SY-84 board is not shown.
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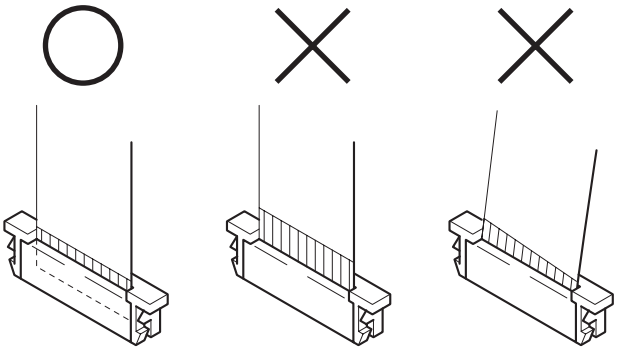
Parts list of the SY-84 board are not shown.
Pages from 5-7 to 5-12 are not shown.

COVER

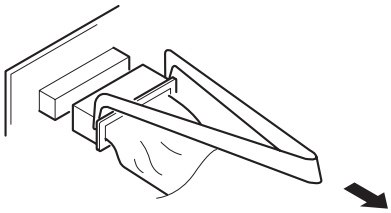
SECTION 1
SERVICE NOTE

• NOTE FOR REPAIR

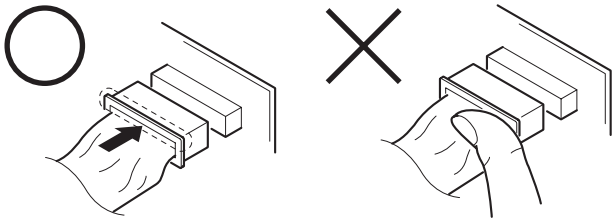
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



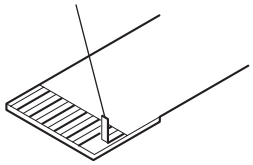
When remove a connector, don't pull at wire of connector.
Be in danger of the snapping of a wire.



When installing a connector, don't press down at wire of connector.
Be in danger of the snapping of a wire.



Cut and remove the part of gilt which comes off at the point. (Take care that there are some pieces of gilt left inside)

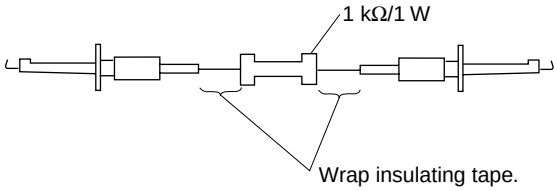


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the capacitor is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the DSC-P32 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

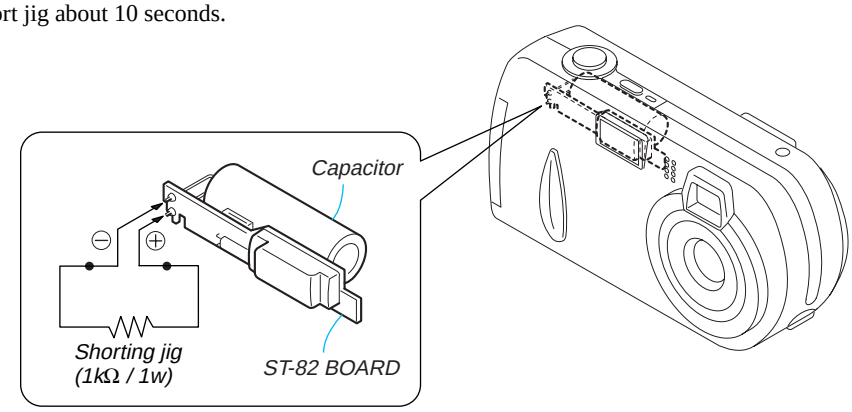
Preparing the Short Jig

To preparing the short jig. a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11)
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

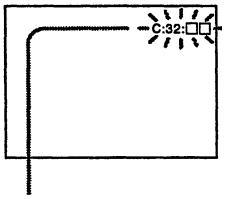
Short circuits between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

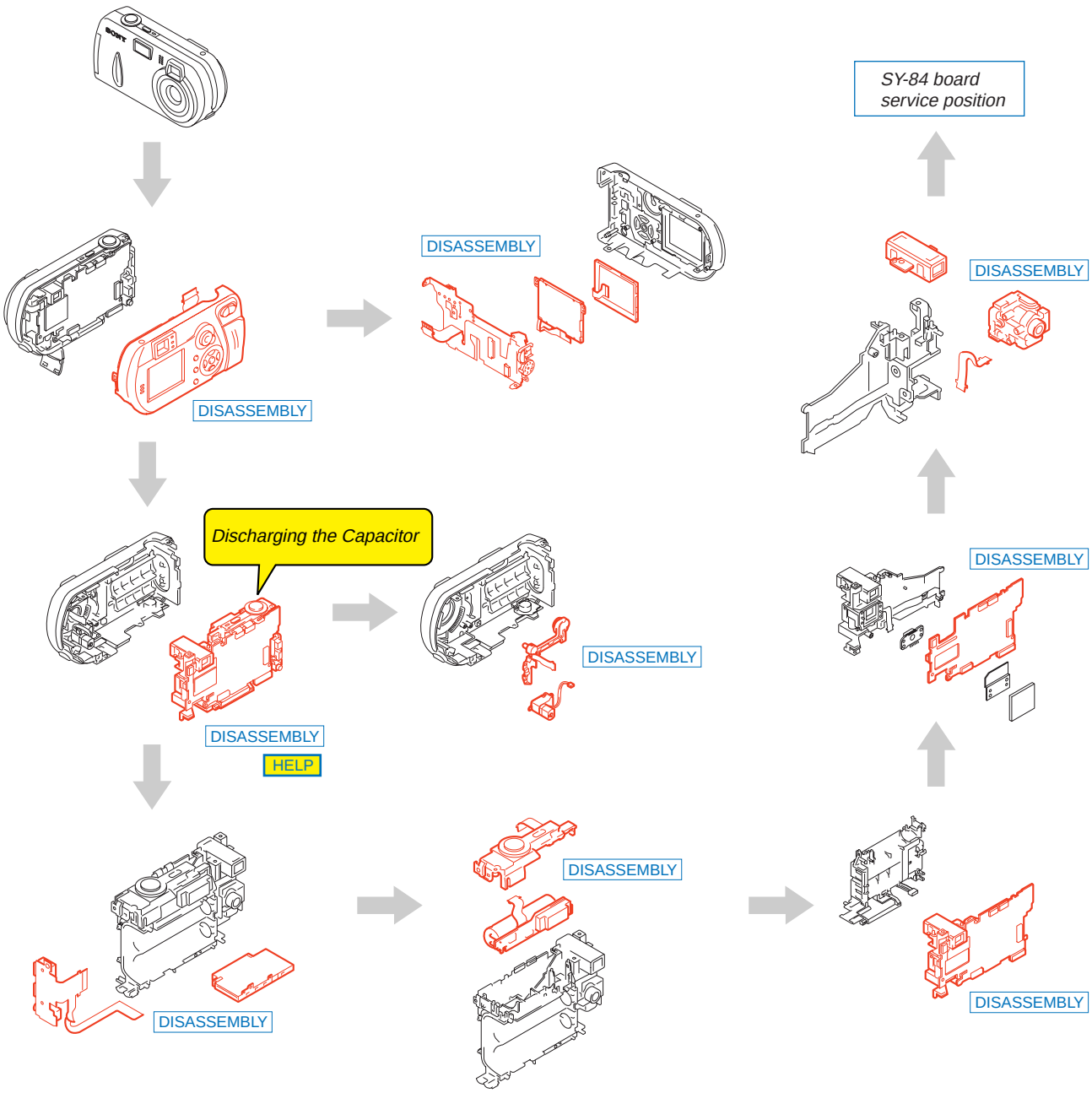
- C: □□: □□
  The contents which can be handled by customer, are displayed.
- E: □□: □□
  The contents which can be handled by engineer, are displayed.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Turn off the main power then back on.	Trouble with hardware.	SYSTEM ERROR
C:13:01	Replace the memory stick. Format the memory stick with the DSC-P32.	• The type of memory stick that cannot be used by this machine, is inserted. • Data is damaged. • Unformatted memory stick is inserted.	MS ERROR
E:91:01	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	Flash LED Flash display Flashing at 3.2 Hz
E:61:00 *1	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10 *1			

Note : The error code is cleared if the battery is removed, except defective flash unit.
*1: The error display is given in two ways.

SECTION 2
DISASSEMBLY

The following flow chart shows the disassembly procedure.



PROCEDURE OF REMOVING SY-84 BOARD (SERVICE POSITION)

① 2-1. CABINET (REAR) BLOCK ASSEMBLY ..... (page 2-2)
② 2-2. LCD MODULE, BLOCK LIGHT GUIDE PLATE, CONTROL SWITCH BLOCK (SW-390), LITHIUM BATTERY..... (page 2-2)
③ 2-3. MAIN BLOCK ASSEMBLY ..... (page 2-3)
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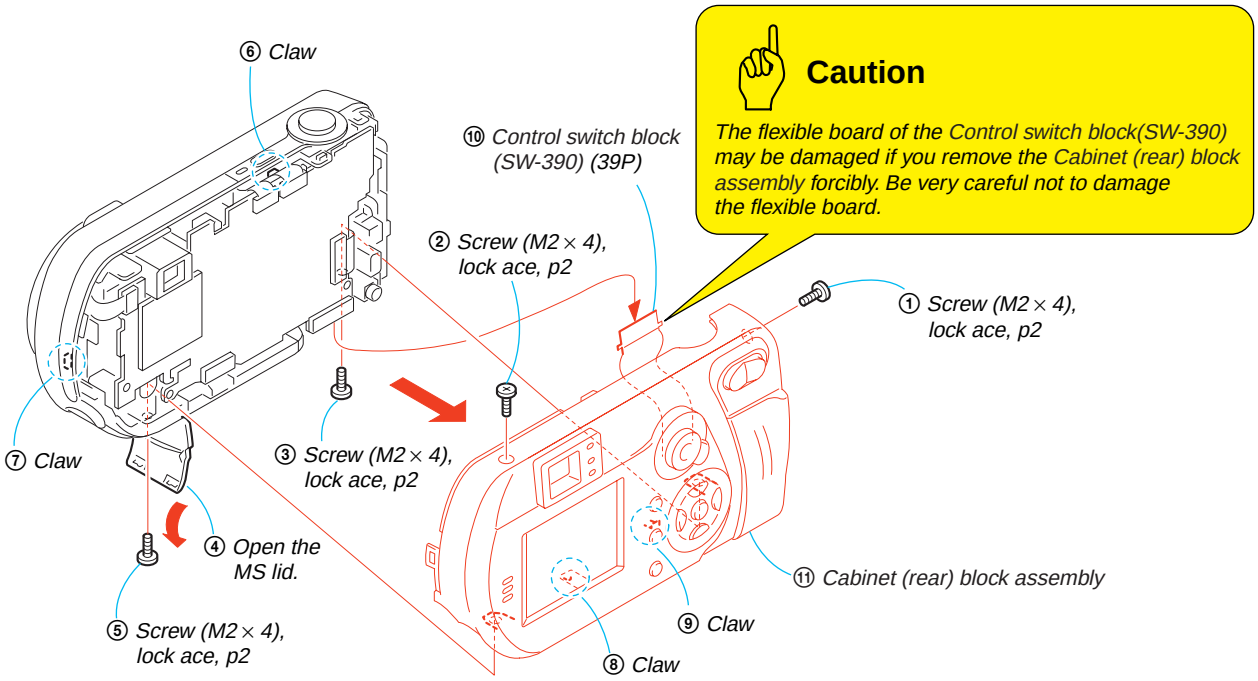
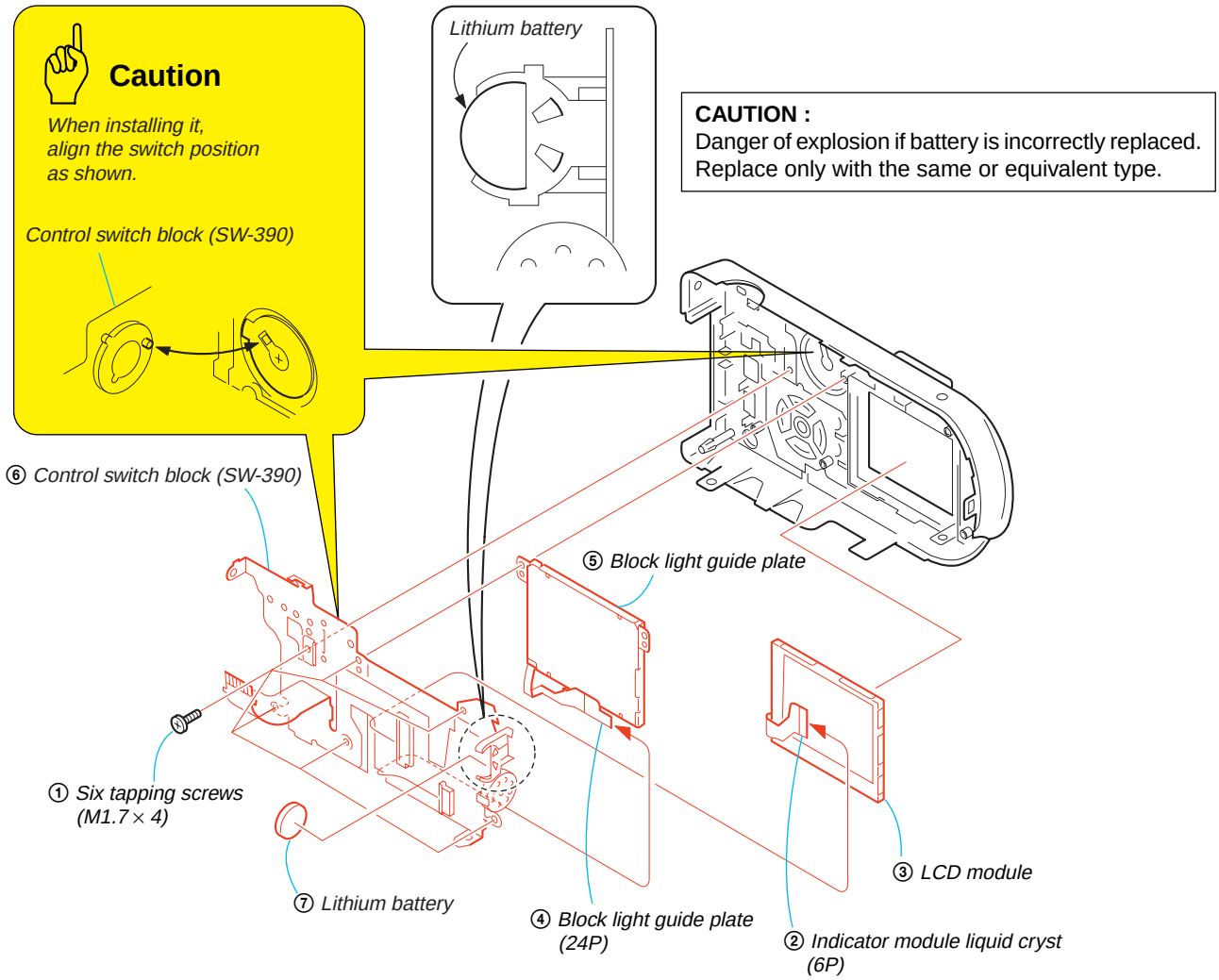
⑦ 2-7. LENS FRAME BLOCK ASSEMBLY ..... (page 2-5)
⑧ 2-8. SY-84 BOARD ..... (page 2-6)

NOTE: Follow the disassembly procedure in the numerical order given.

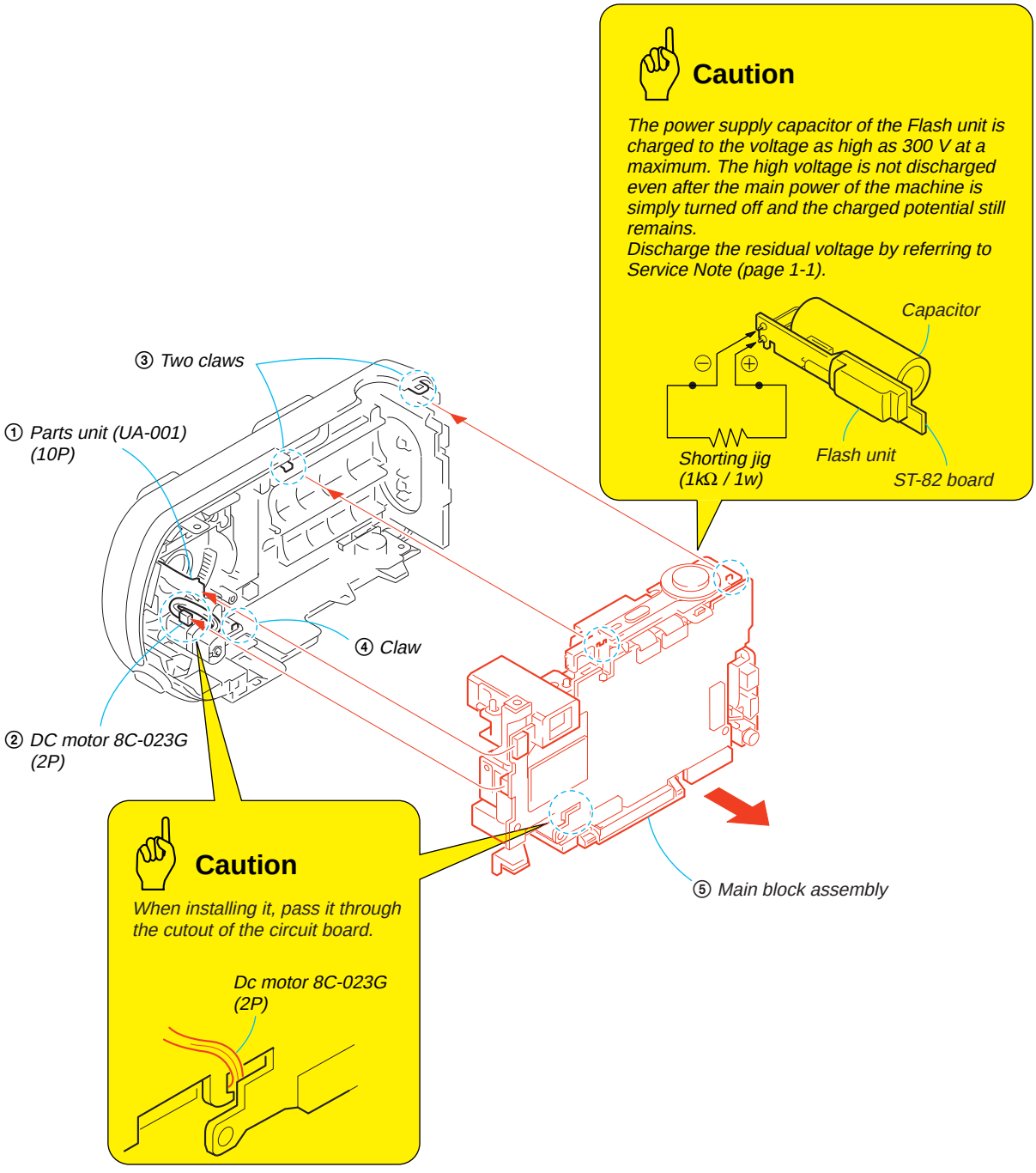
2-1. CABINET (REAR) BLOCK ASSEMBLY


⑥ Claw
⑩ Control switch block (SW-390) (39P)
② Screw (M2 × 4), lock ace, p2
① Screw (M2 × 4), lock ace, p2
⑦ Claw
③ Screw (M2 × 4), lock ace, p2
④ Open the MS lid.
⑤ Screw (M2 × 4), lock ace, p2
⑪ Cabinet (rear) block assembly
⑨ Claw
⑧ Claw
Caution
The flexible board of the Control switch block(SW-390) may be damaged if you remove the Cabinet (rear) block assembly forcibly. Be very careful not to damage the flexible board.

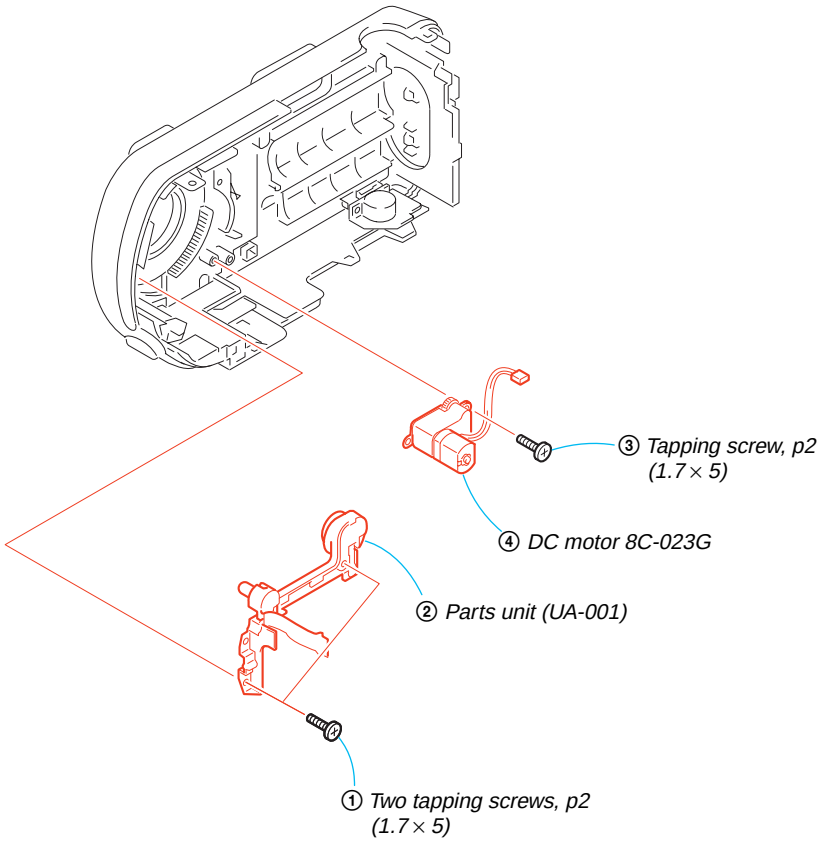
2-2. LCD MODULE, CONTROL SWITCH BLOCK (SW-390), BLOCK LIGHT GUIDE PLATE, LITHIUM BATTERY


Caution
When installing it, align the switch position as shown.
Control switch block (SW-390)
Lithium battery
CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.
⑥ Control switch block (SW-390)
⑤ Block light guide plate
① Six tapping screws (M1.7 × 4)
⑦ Lithium battery
④ Block light guide plate (24P)
③ LCD module
② Indicator module liquid cryst (6P)

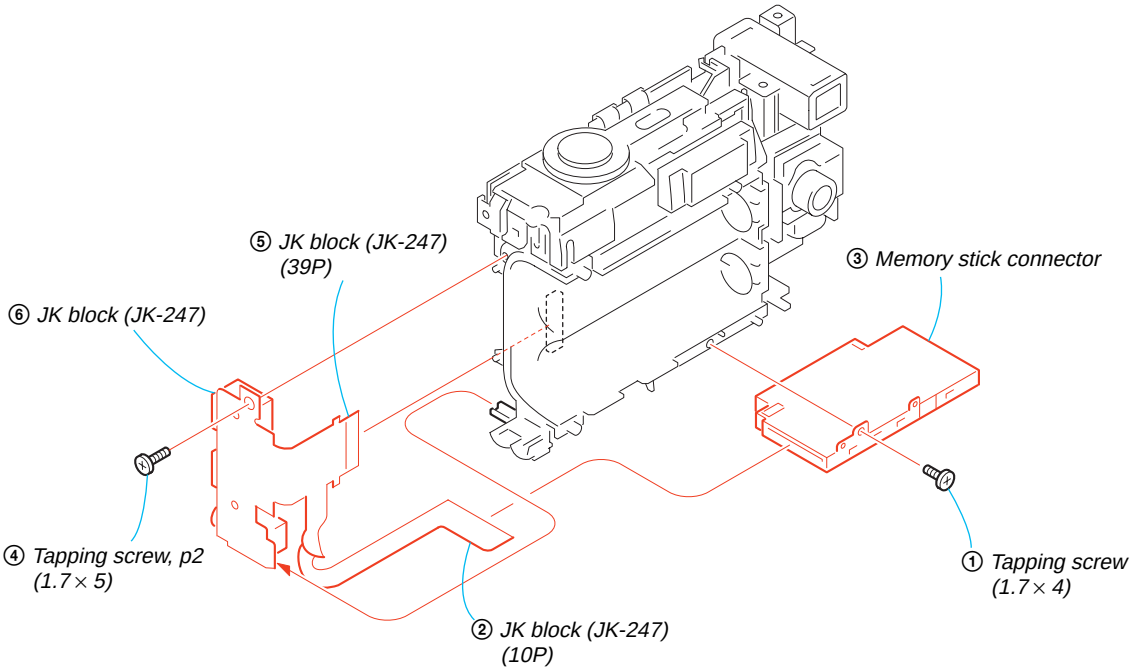
2-3. MAIN BLOCK ASSEMBLY


Caution
The power supply capacitor of the Flash unit is charged to the voltage as high as 300 V at a maximum. The high voltage is not discharged even after the main power of the machine is simply turned off and the charged potential still remains.
Discharge the residual voltage by referring to Service Note (page 1-1).
Capacitor
Shorting jig (1kΩ / 1w)
Flash unit
ST-82 board
③ Two claws
① Parts unit (UA-001) (10P)
④ Claw
② DC motor 8C-023G (2P)
⑤ Main block assembly
Caution
When installing it, pass it through the cutout of the circuit board.
Dc motor 8C-023G (2P)

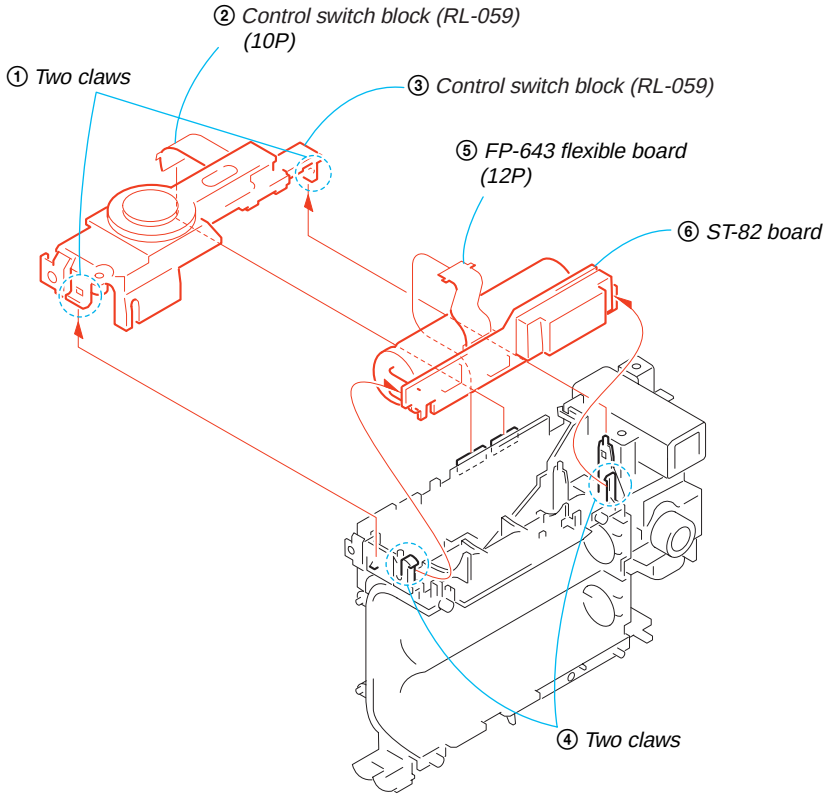
2-4. PARTS UNIT (UA-001), DC MOTOR 8C-023G



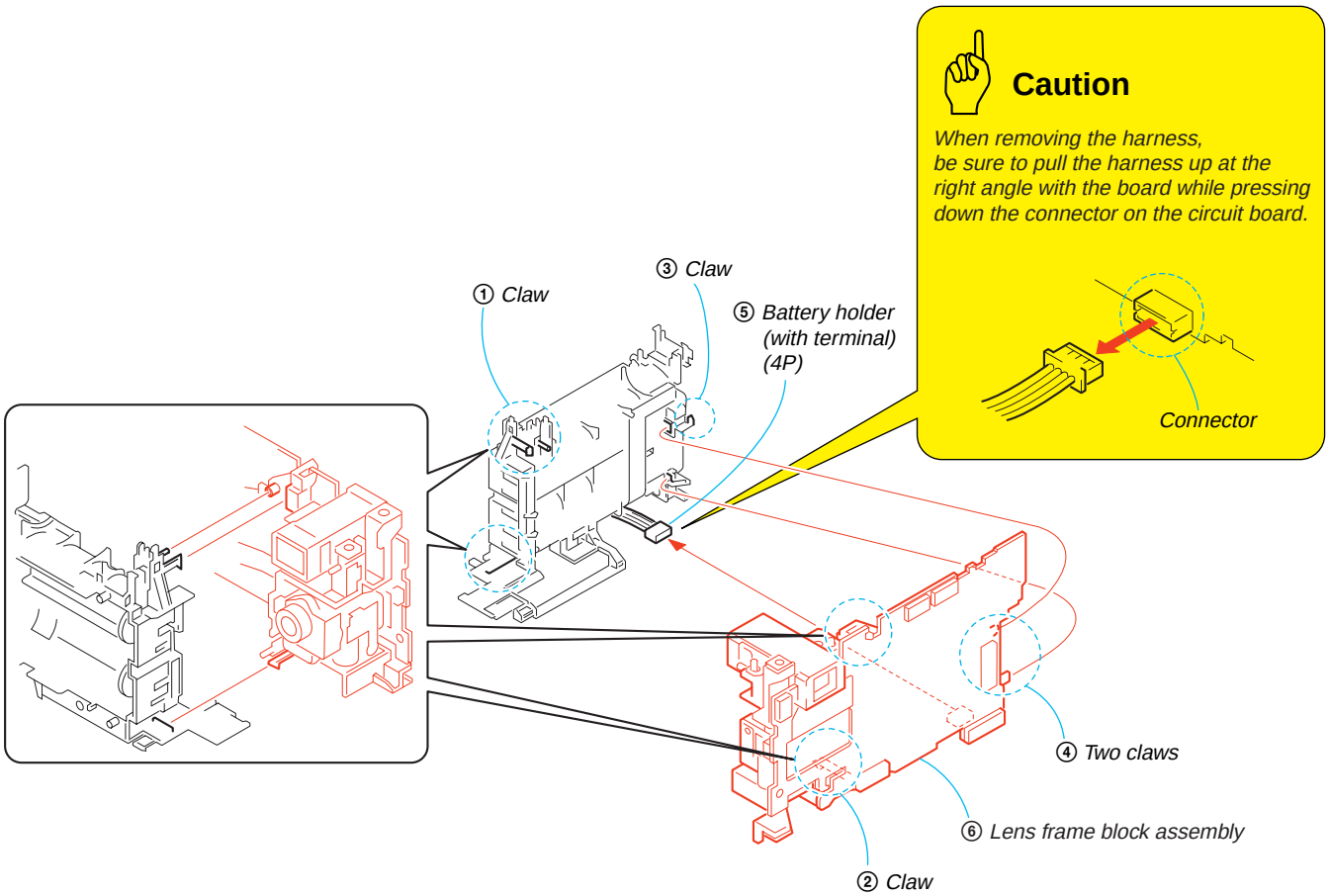
2-5. MEMORY STICK CONNECTOR, JK BLOCK (JK-247)



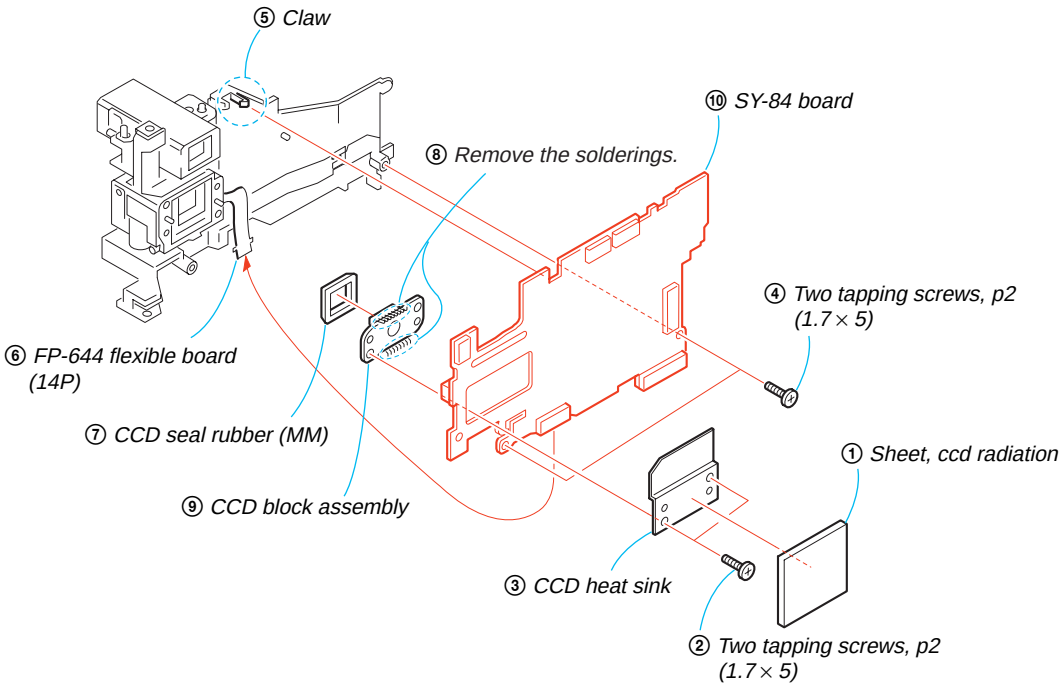
2-6. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD


② Control switch block (RL-059) (10P)
① Two claws
③ Control switch block (RL-059)
⑤ FP-643 flexible board (12P)
⑥ ST-82 board
④ Two claws

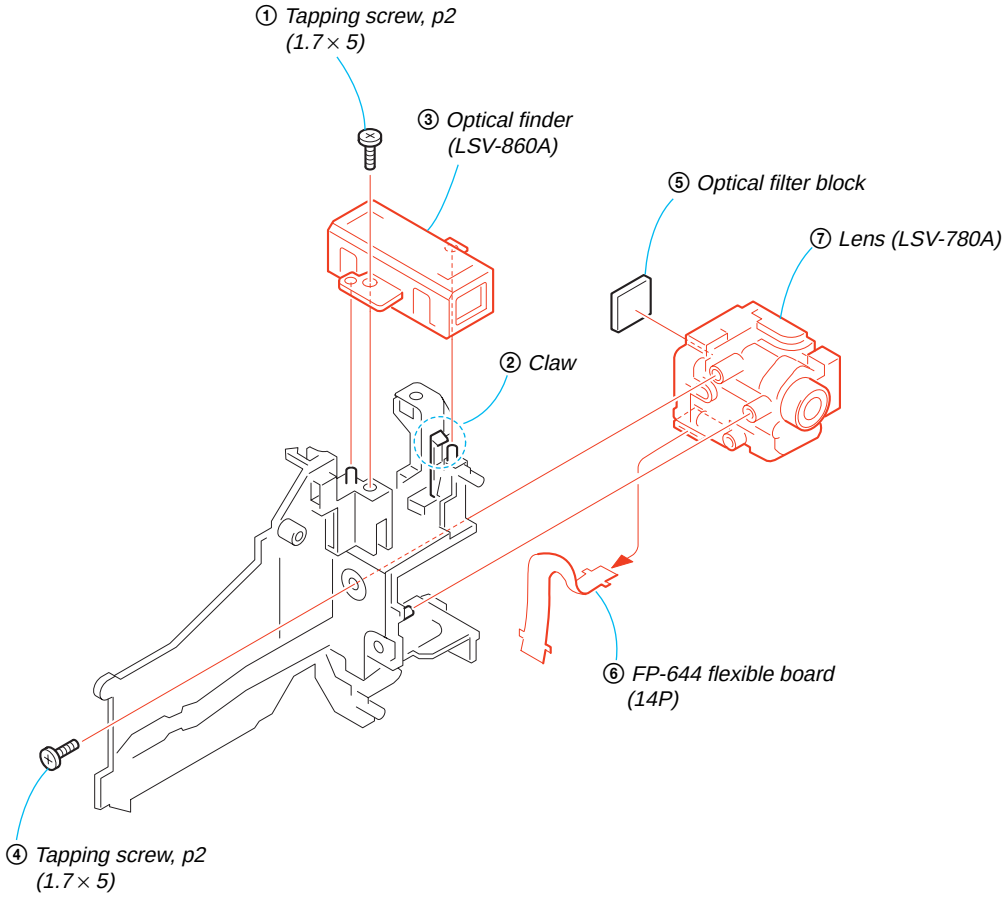
2-7. LENS FRAME BLOCK ASSEMBLY


Caution
When removing the harness, be sure to pull the harness up at the right angle with the board while pressing down the connector on the circuit board.
Connector
① Claw
③ Claw
⑤ Battery holder (with terminal) (4P)
④ Two claws
⑥ Lens frame block assembly
② Claw

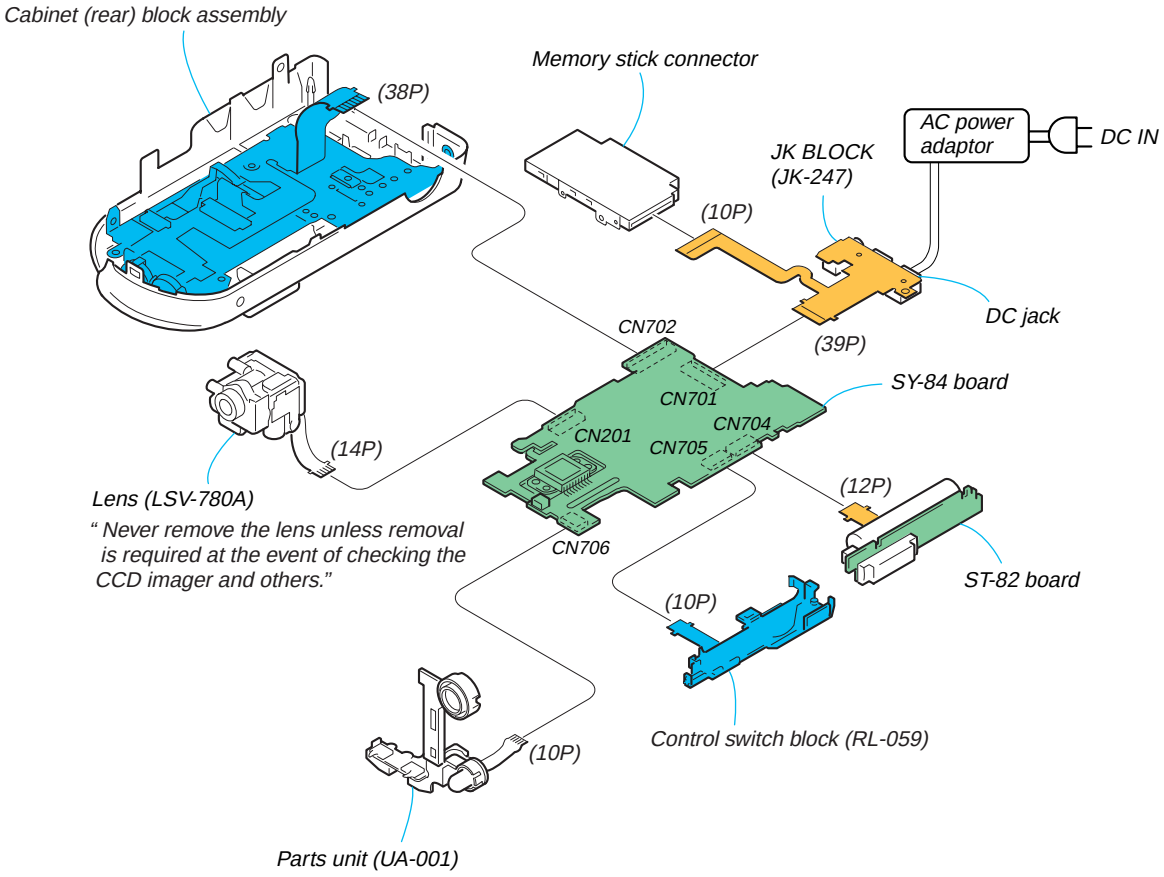
2-8. SY-84 BOARD



2-9. OPTICAL FINDER (LSV-860A), FP-644 FLEXIBLE BOARD, LENS (LSV-780A)



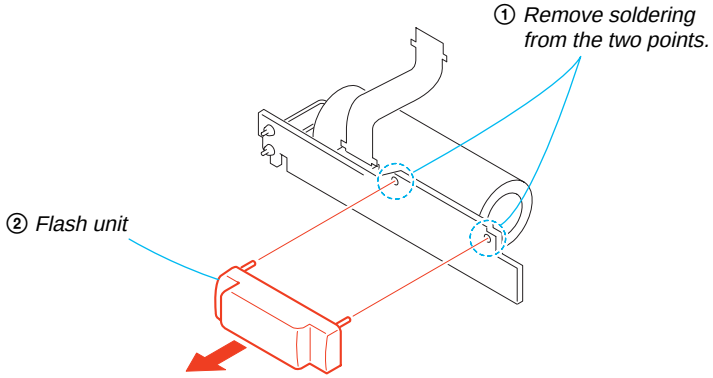
[SERVICE POSITION (SY-84 BOARD)]



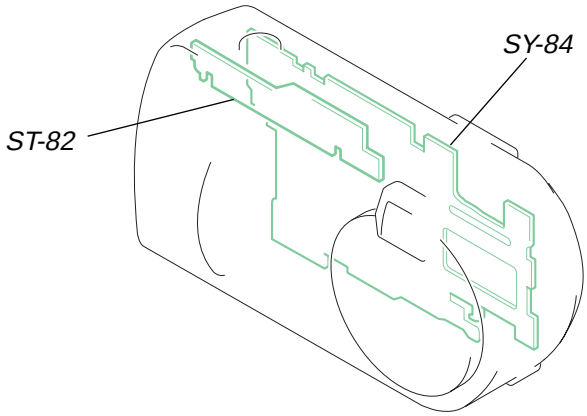
PROCEDURE OF REMOVING SY-84 BOARD (SERVICE POSITION)

① 2-1. CABINET (REAR) BLOCK ASSEMBLY ..... (page 2-2)
② 2-2. LCD MODULE, BLOCK LIGHT GUIDE PLATE, CONTROL SWITCH BLOCK (SW-390), LITHIUM BATTERY ..... (page 2-2)
③ 2-3. MAIN BLOCK ASSEMBLY ..... (page 2-3)
④ 2-4. PARTS UNIT (UA-001), DC MOTOR 8C-023G ..... (page 2-4)
⑤ 2-5. MEMORY STICK CONNECTOR, JK BLOCK (JK-247)..... (page 2-4)
⑥ 2-6. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD ..... (page 2-5)
⑦ 2-7. LENS FRAME BLOCK ASSEMBLY ..... (page 2-5)
⑧ 2-8. SY-84 BOARD ..... (page 2-6)

2-10. FLASH UNIT



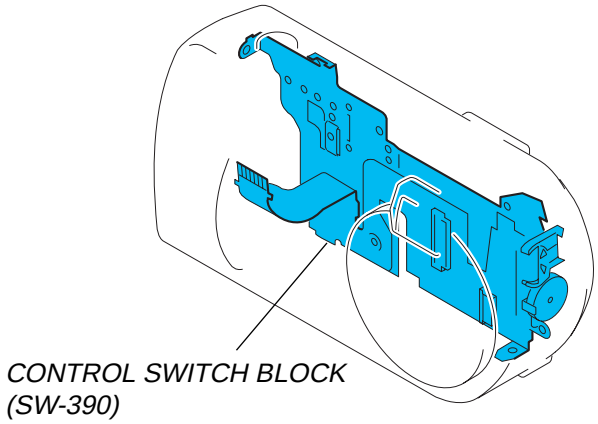
2-11. CIRCUIT BOARDS LOCATION

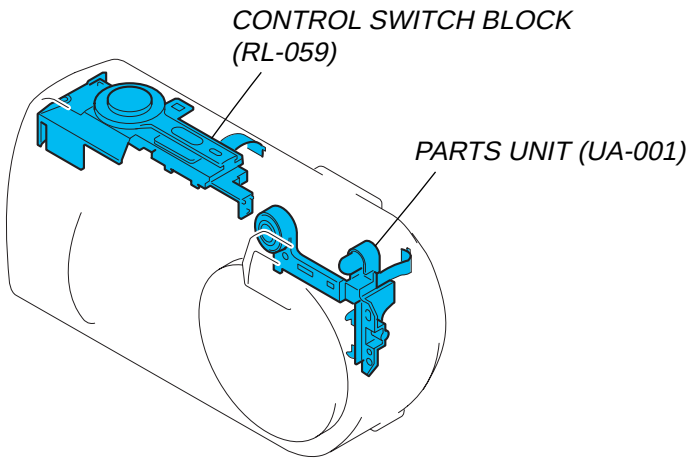


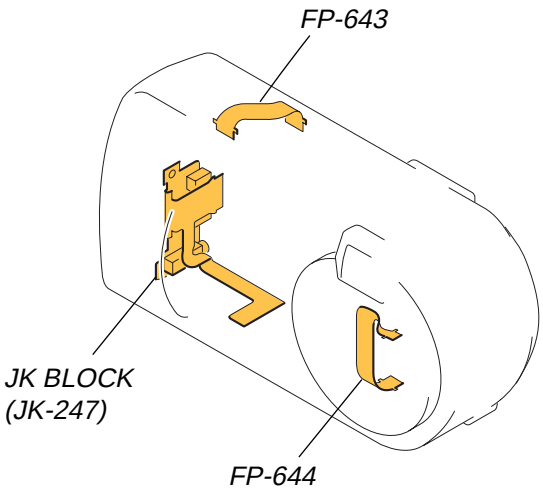
Board Name	Function
SY-84	CCD IMAGER, CAMERA A/D CONV, LENS DRIVE, CAMERA DSP, VIDEO AMP, SH DSP, CLK GEN., FRONT CONTROL, AUDIO I/O, LCD DRIVE, TIMING GEN., DC IN, DC-DC CONVERTER CONNECTOR.
ST-82	FLASH DRIVE

2-12. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the video lens are not shown.





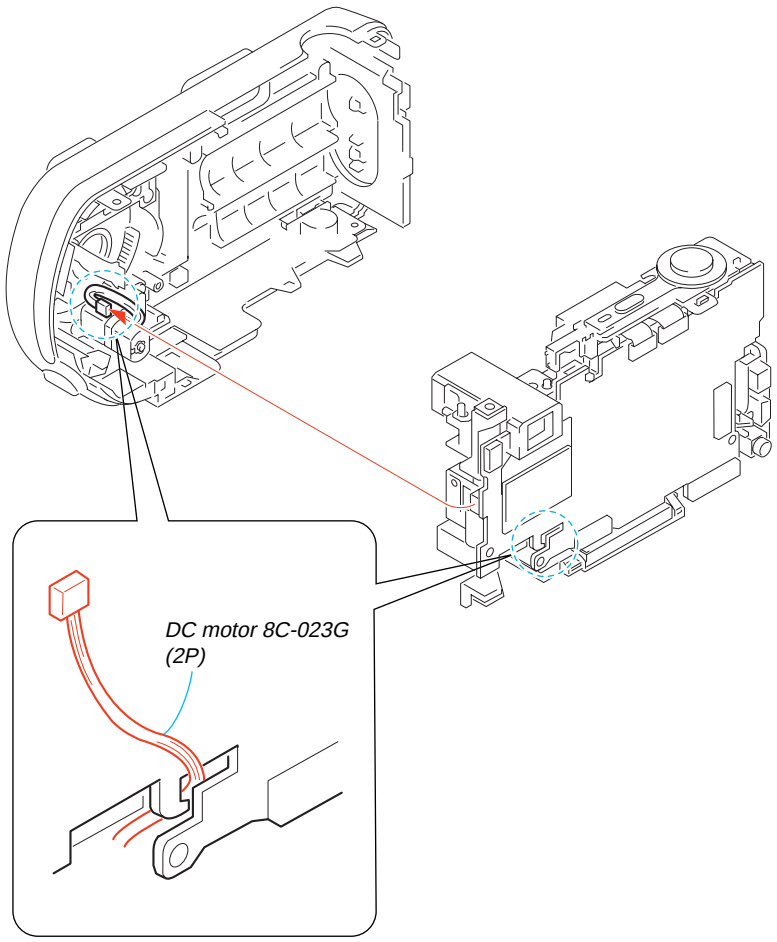


27/Feb/2003

HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

MAIN BLOCK ASSEMBLY



COVER

3. BLOCK DIAGRAMS

Link

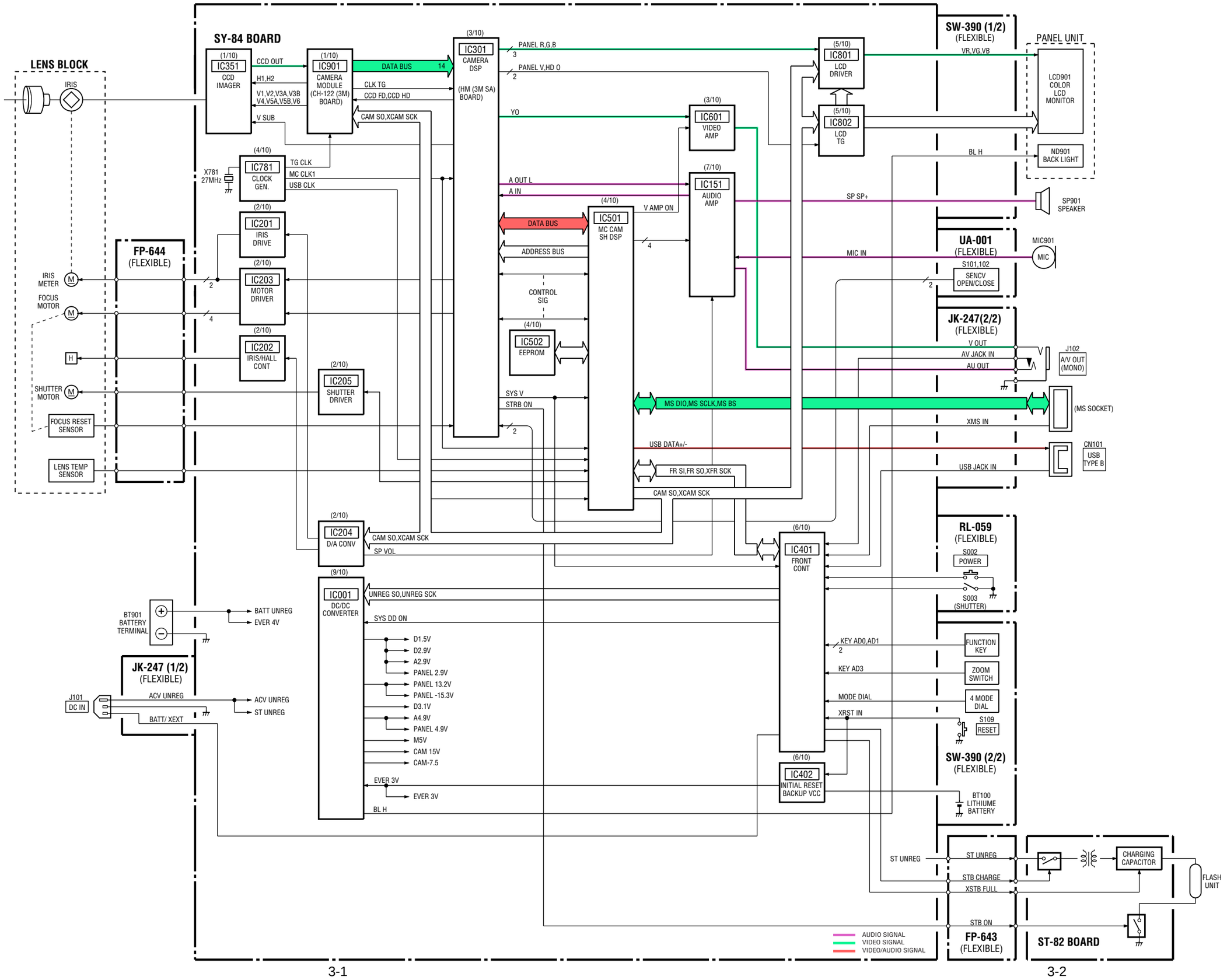
- OVERALL BLOCK DIAGRAM
- FRONT/LCD BLOCK DIAGRAM
- CAMERA BLOCK DIAGRAM
- POWER BLOCK DIAGRAM

COVER

SECTION 3
BLOCK DIAGRAMS

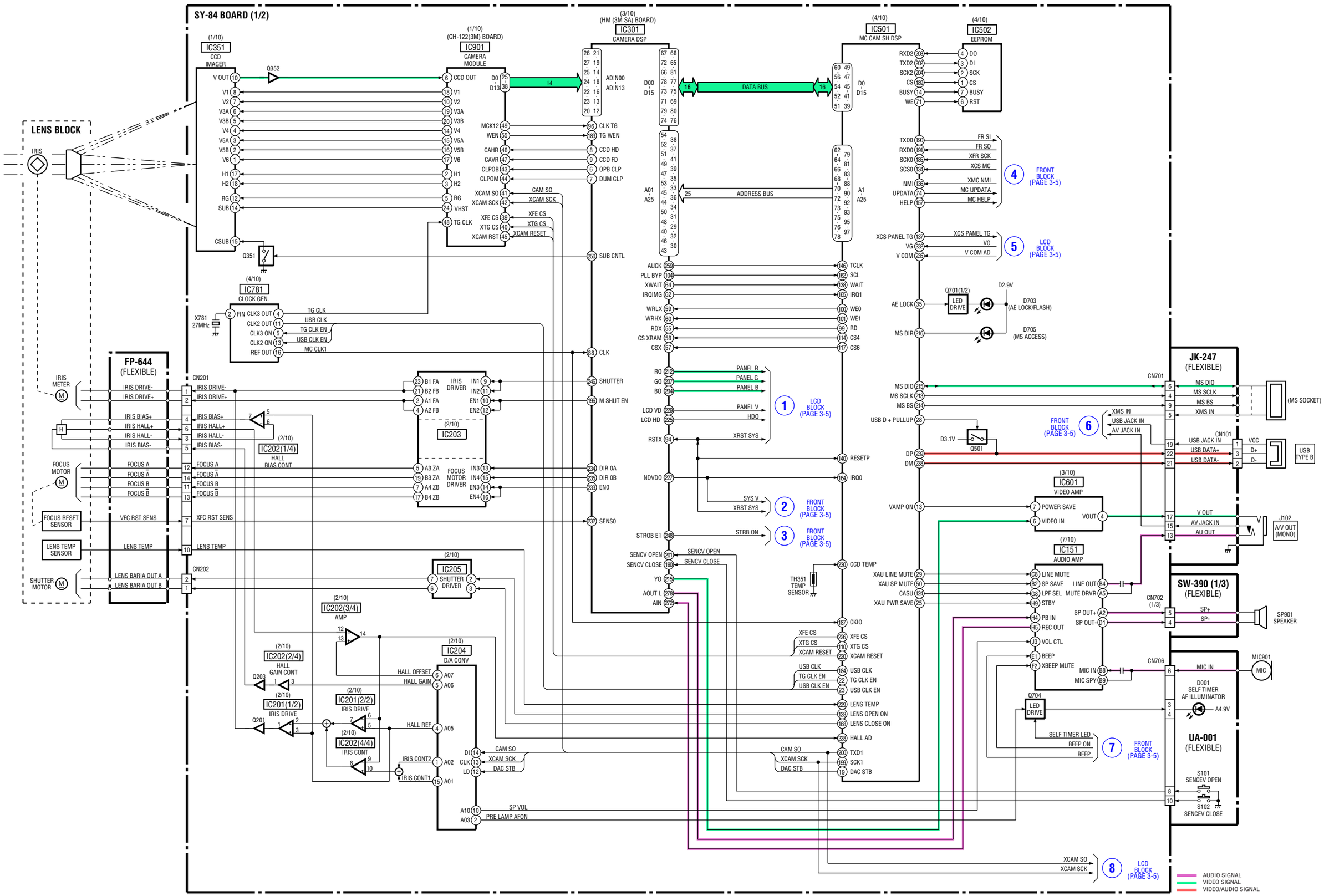
3-1. OVERALL BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



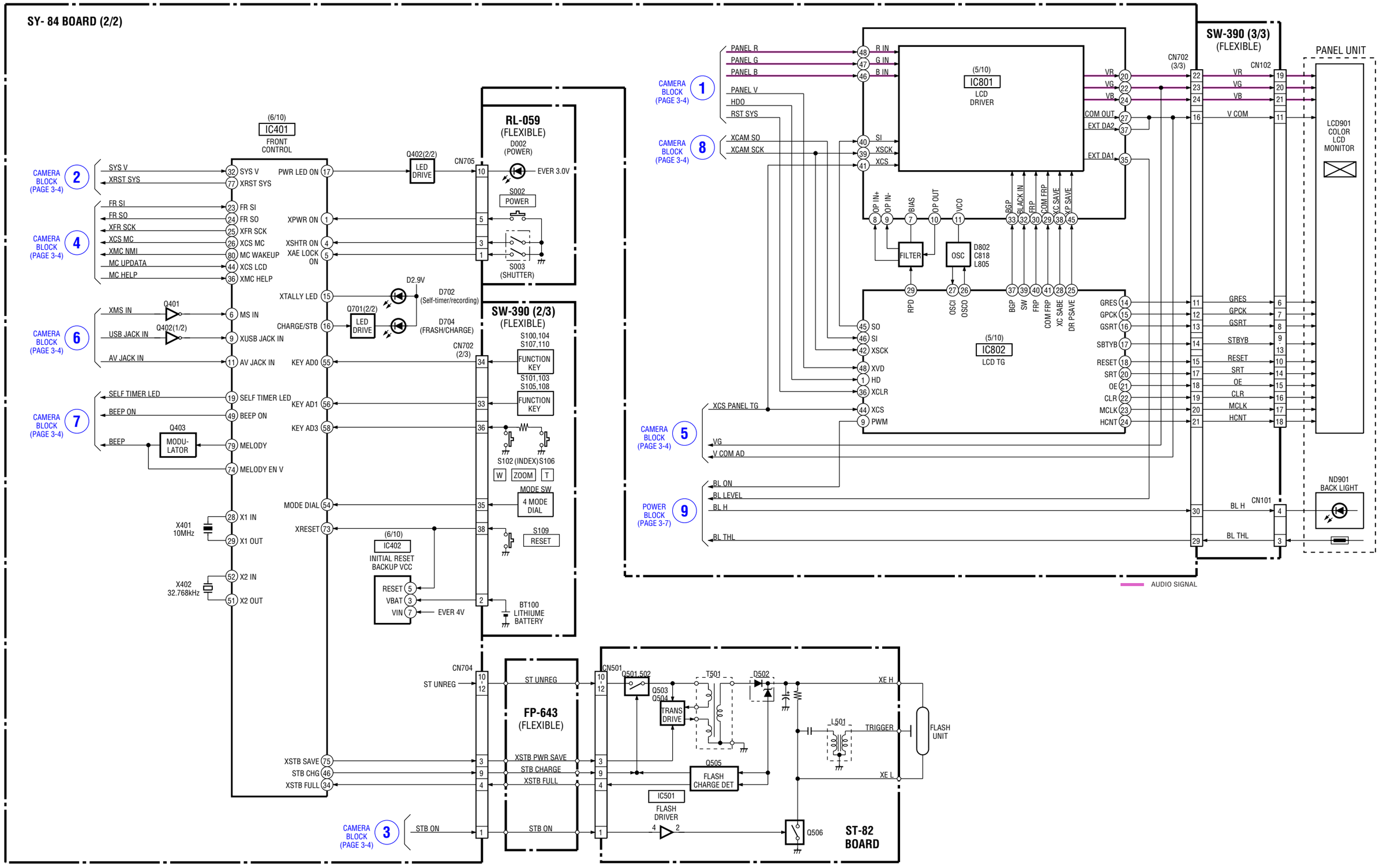
3-2. CAMERA BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



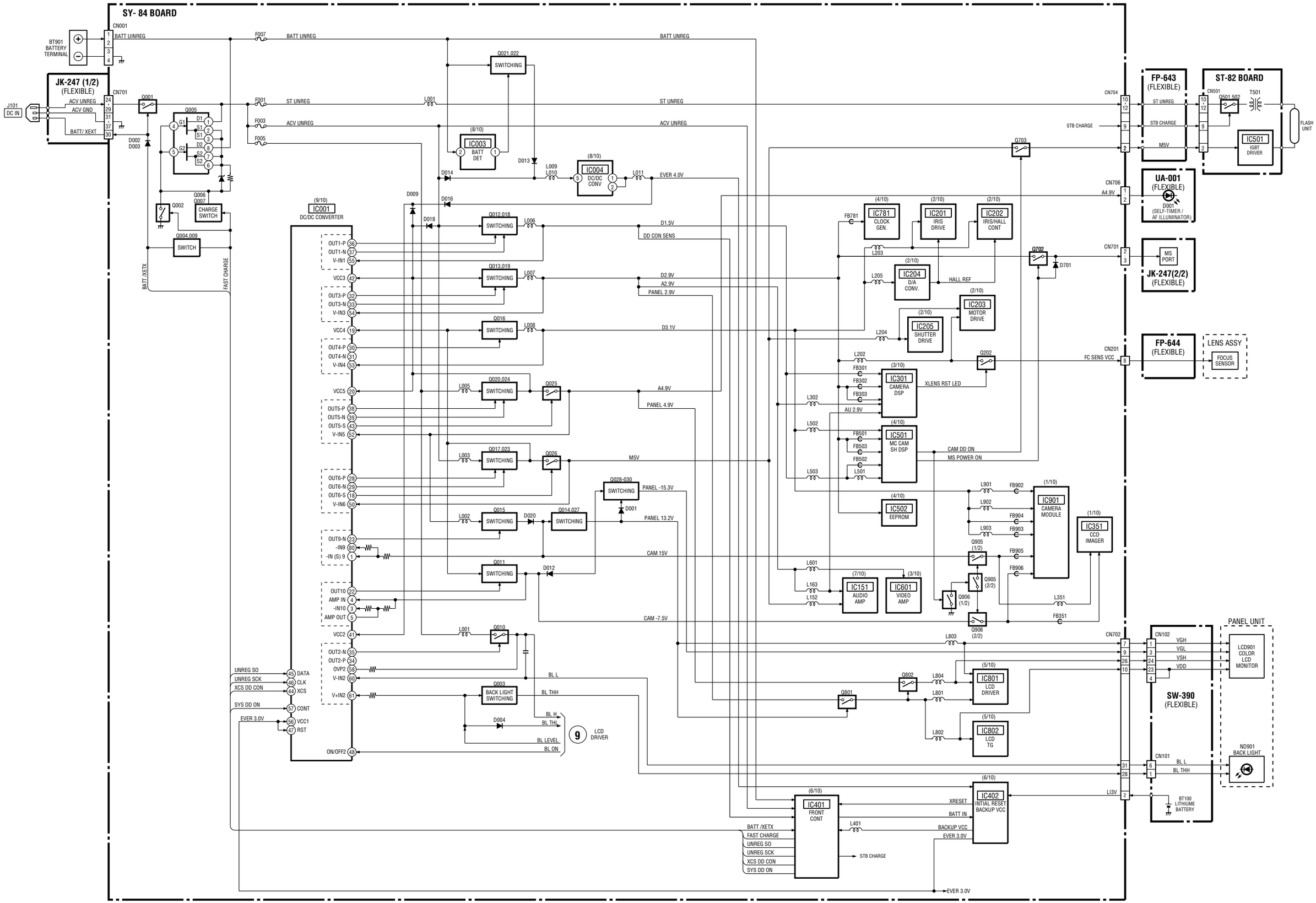
3-3. FRONT/LCD BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



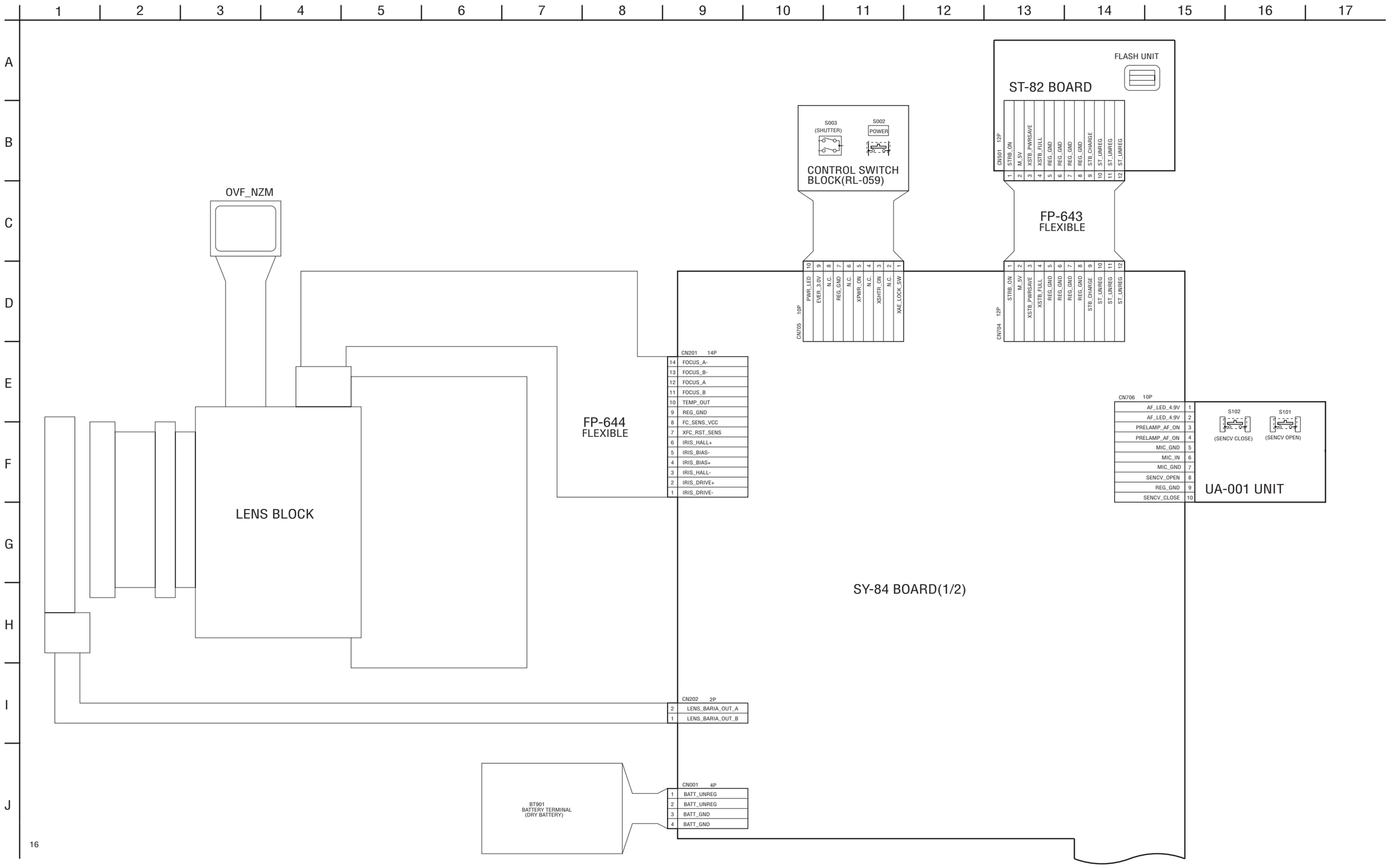
3-4. POWER BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

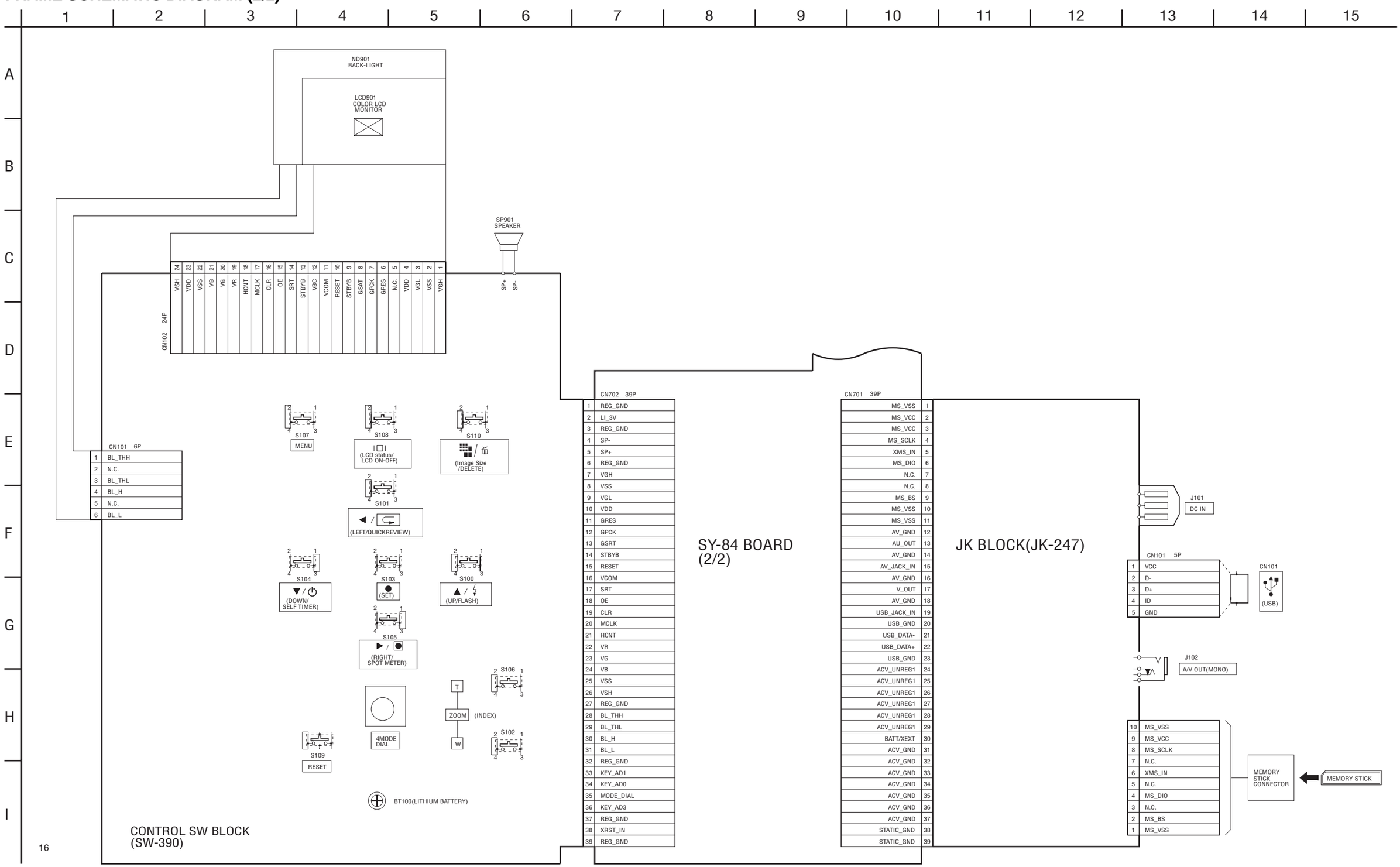


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1/2)



FRAME SCHEMATIC DIAGRAM (2/2)



COVER

4-2. SCHEMATIC DIAGRAMS

Link

- ST-82 BOARD (FLASH DRIVE)
- CONTROL SWITCH BLOCK (SW-390)
- FP-643 FLEXIBLE BOARD
- CONTROL SWITCH BLOCK (RL-059)
- JK BLOCK (JK-247) (JACK)
- UA-001 (MIC, AF LED)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS

COVER

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example

C541	L452
22U	10UH
TA A	2520

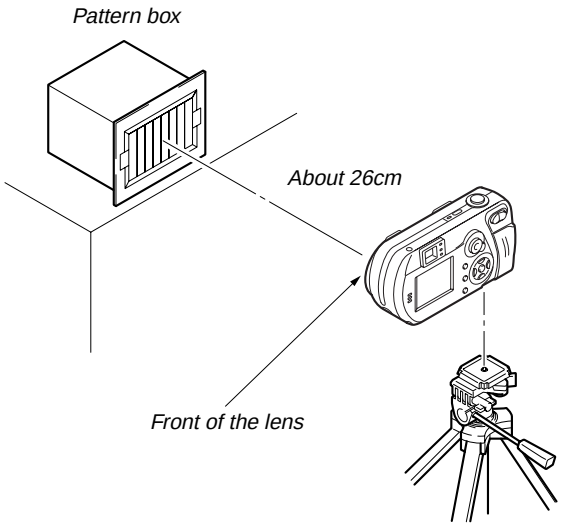
Kinds of capacitor
Temperature characteristics
External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with * differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : VIDEO SIGNAL (ANALOG)
- : AUDIO SIGNAL (ANALOG)
- : VIDEO/AUDIO SIGNAL
- : VIDEO/AUDIO/SERVO SIGNAL
- : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

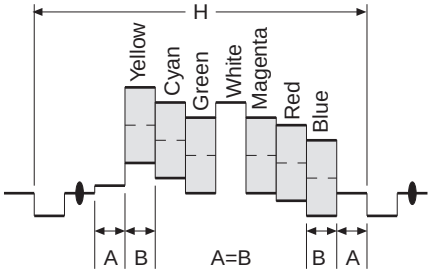


Fig. a (Video output terminal output waveform)

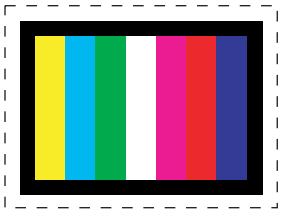


Fig.b (Picture on monitor TV)

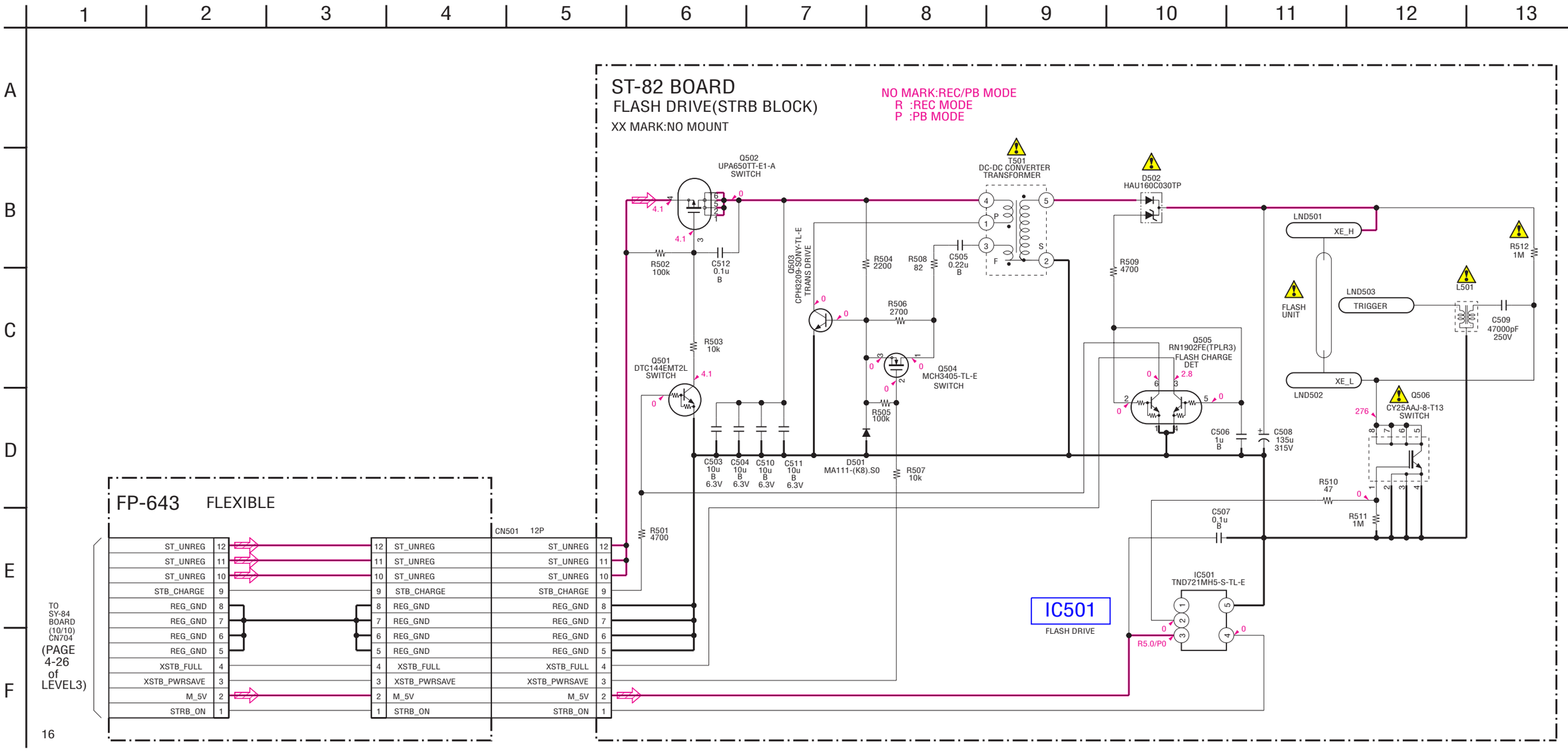
When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-2. SCHEMATIC DIAGRAMS

For Schematic Diagram

• Refer to page 4-37 for printed wiring board of ST-82 board.



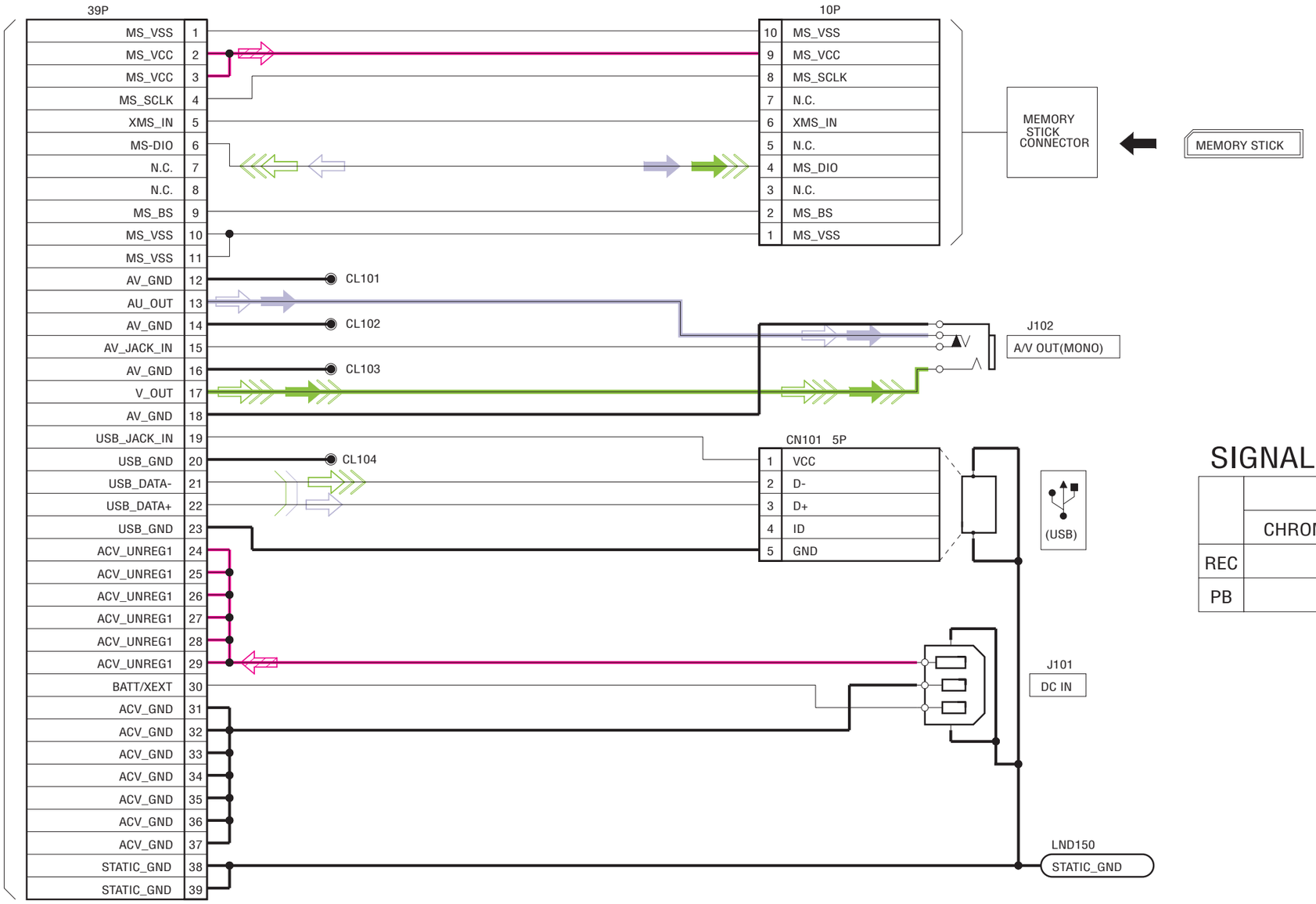
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Schematic diagram of the SY-84 board are not shown.
Pages from 4-7 to 4-26 are not shown.

JK BLOCK(JK-247)

JACK

XX MARK:NO MOUNT



SIGNAL PATH

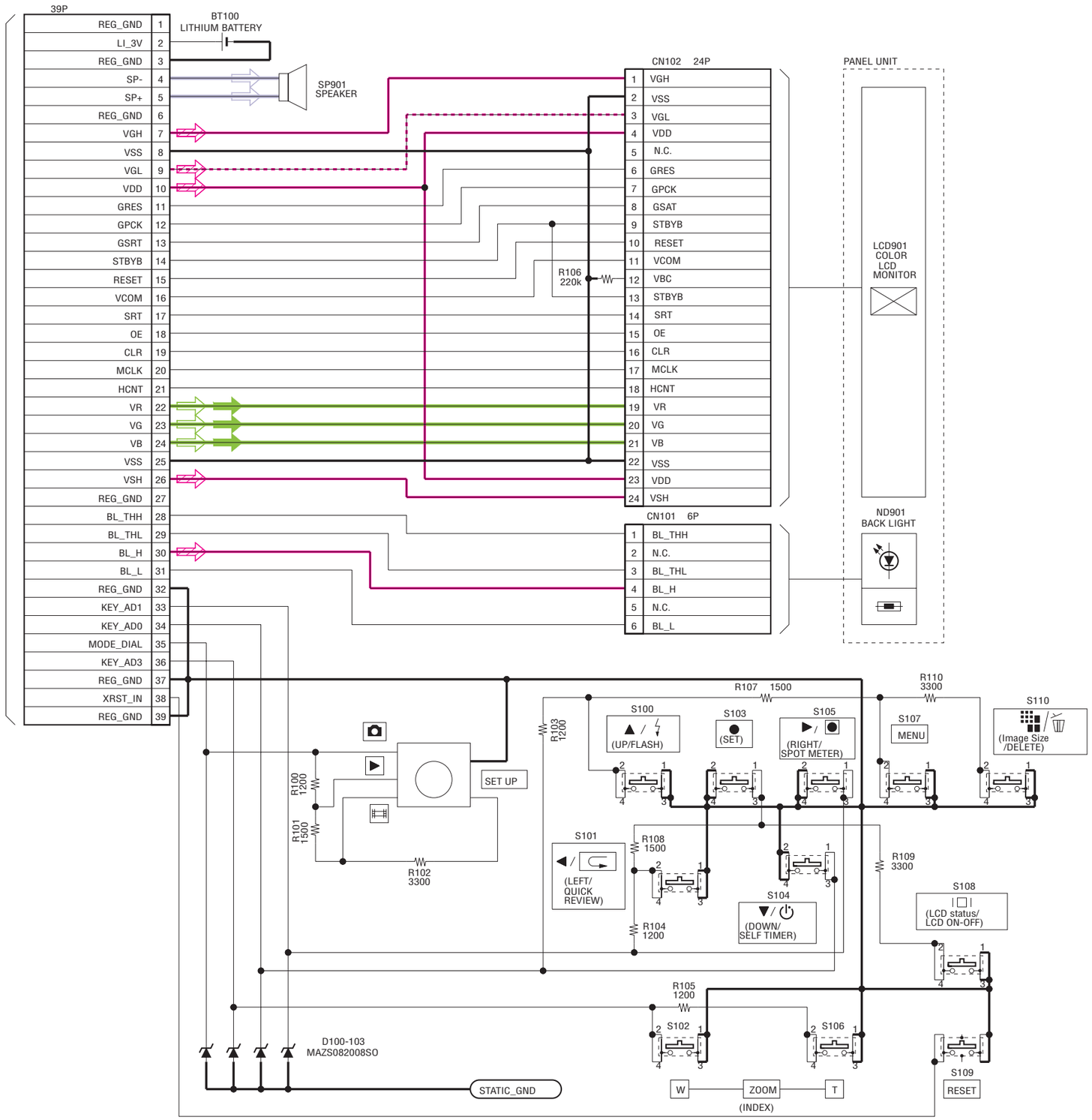
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇒	⇒
PB			⇨	⇨

• CONTROL SWITCH BLOCK (SW-391) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.

CONTROL SWITCH BLOACK (SW-390)

LCD,CONTROL SW(SW BLOCK)

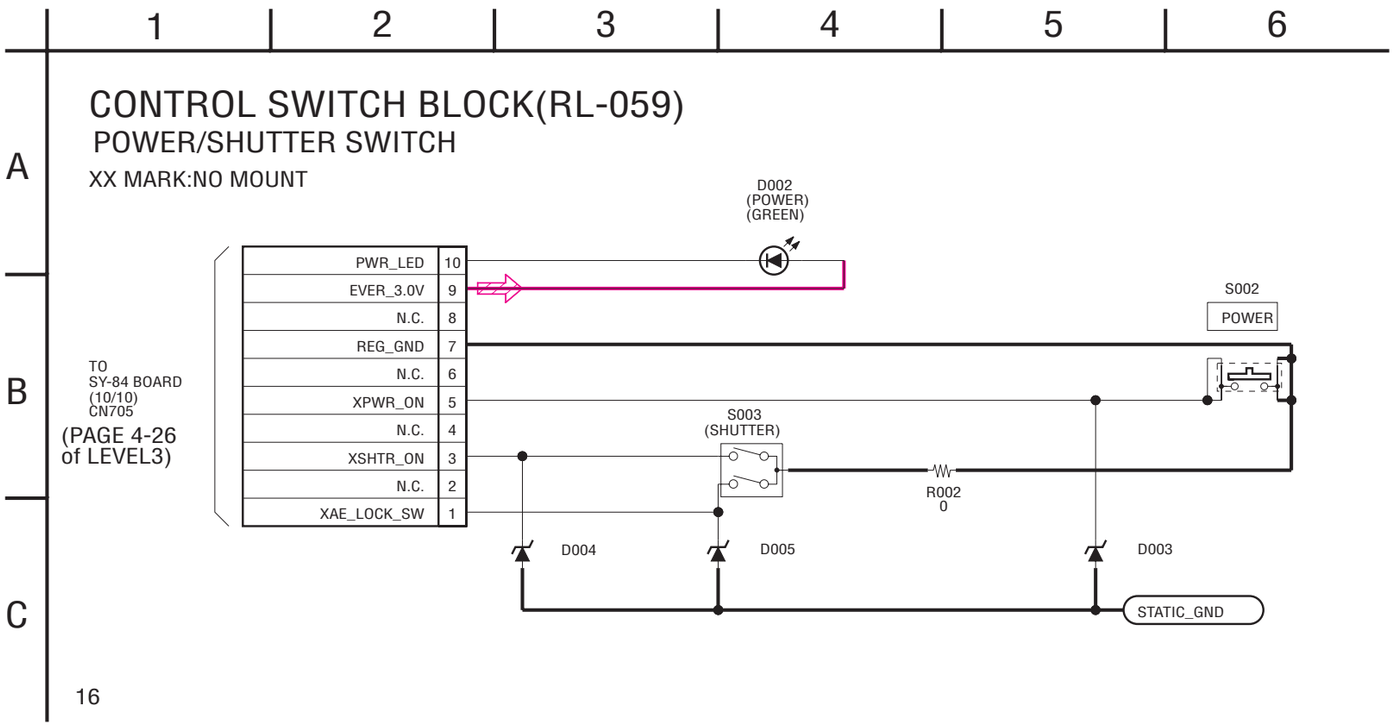
XX MARK:NO MOUNT



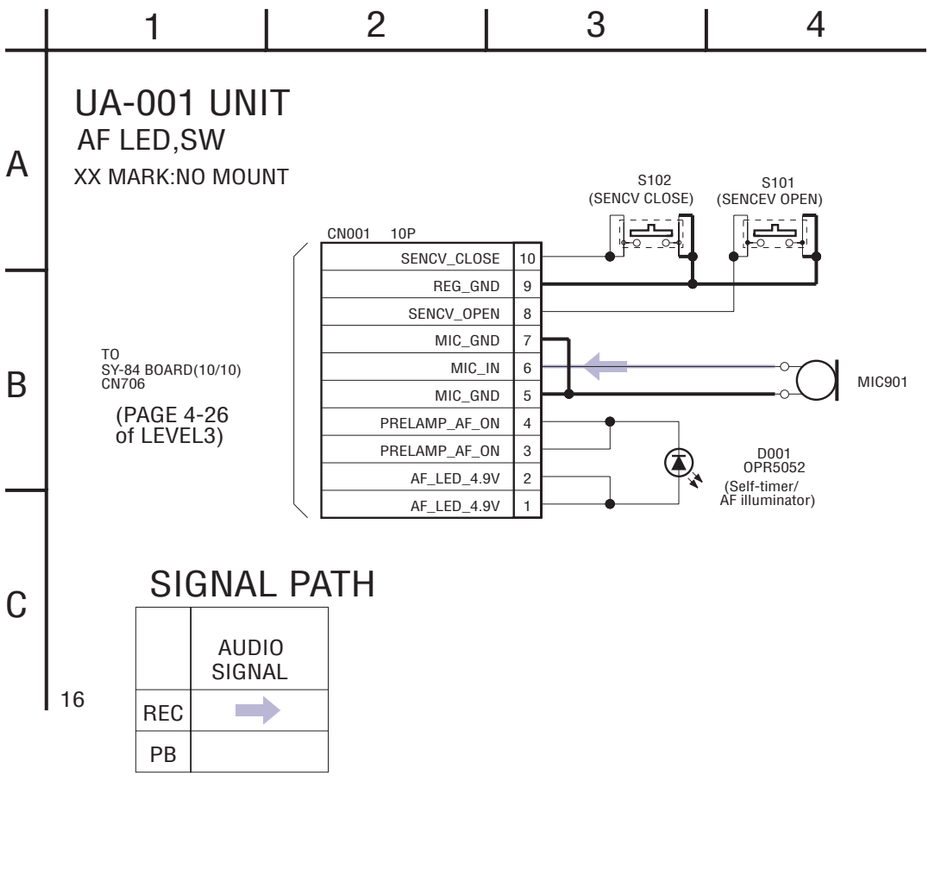
SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

• CONTROL SWITCH BLOCK (RL-059) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



• UA-001 UNIT is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



COVER

4-3. PRINTED WIRING BOARDS

Link

- ST-82 BOARD
- JK BLOCK (JK-247)
- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

COVER

4-3. PRINTED WIRING BOARDS

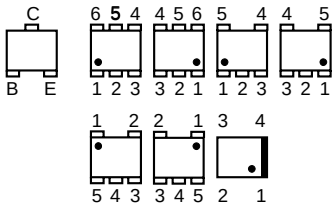
THIS NOTE IS COMMON FOR WIRING BOARDS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

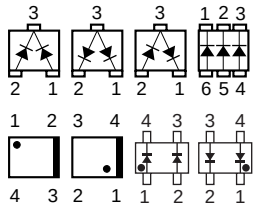
- : Uses unleaded solder.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



BOARD INFORMATION

board name	parts location (shown on page)	waveform (shown on page)	pattern		CSP IC
			number of layers	layers not shown	
ST-82	4-47	–	4	2 to 3	–
JK BLOCK	–	–	1	–	–
SY-84	4-48	4-45	8	2 to 7	IC151, IC401, IC501, IC001, IC301, IC901

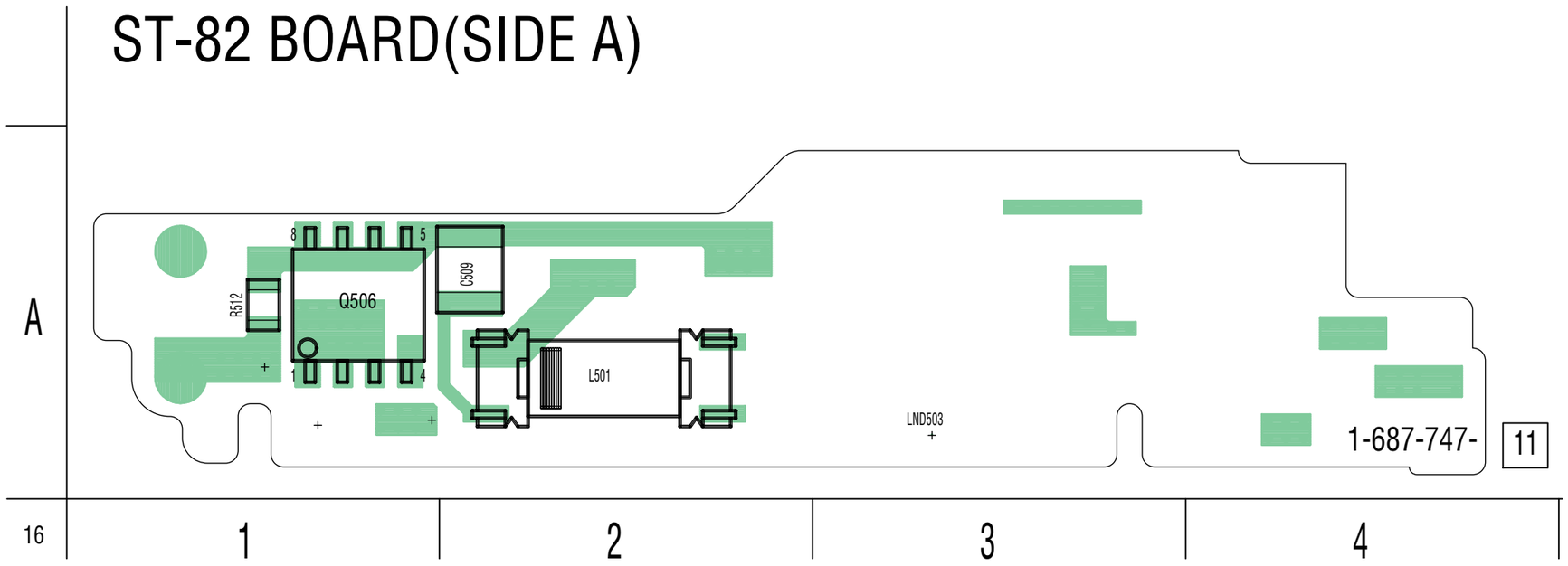
4-3. PRINTED WIRING BOARDS

ST-82 (FLASH DRIVE) PRINTED WIRING BOARD

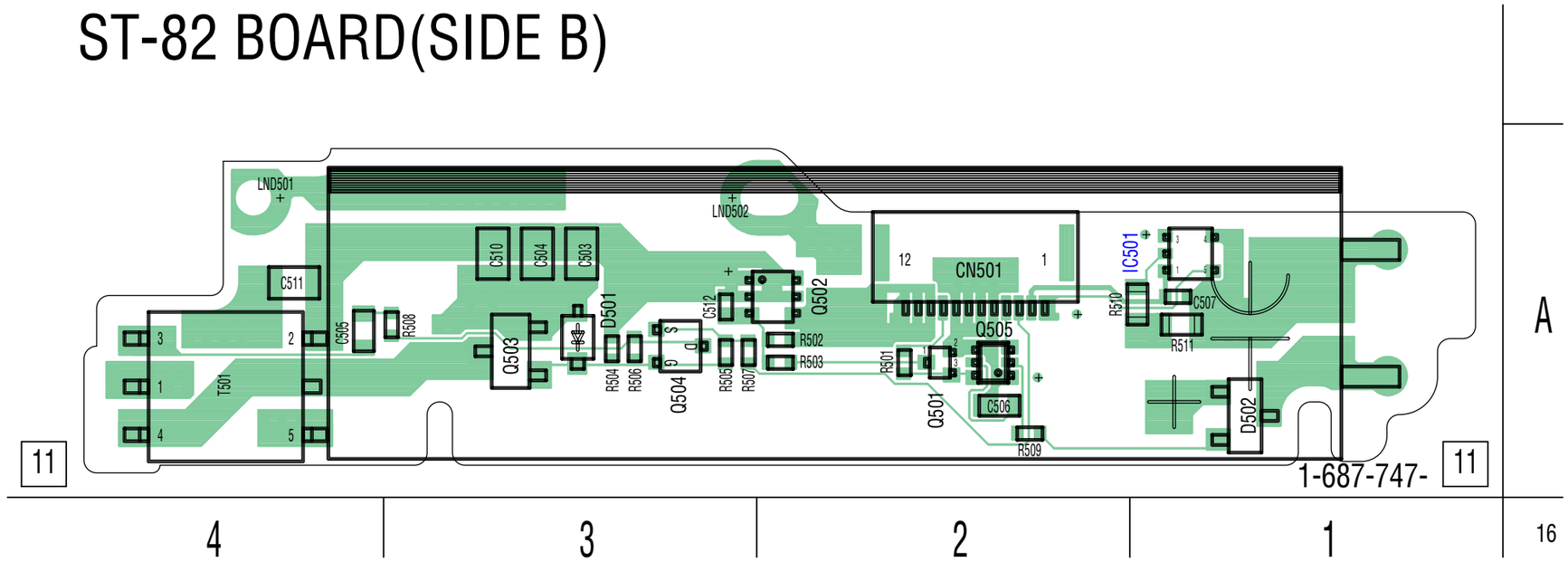
• Refer to page 4-35 for common note for printed wiring board.

• : Uses unleaded solder.

ST-82 BOARD(SIDE A)

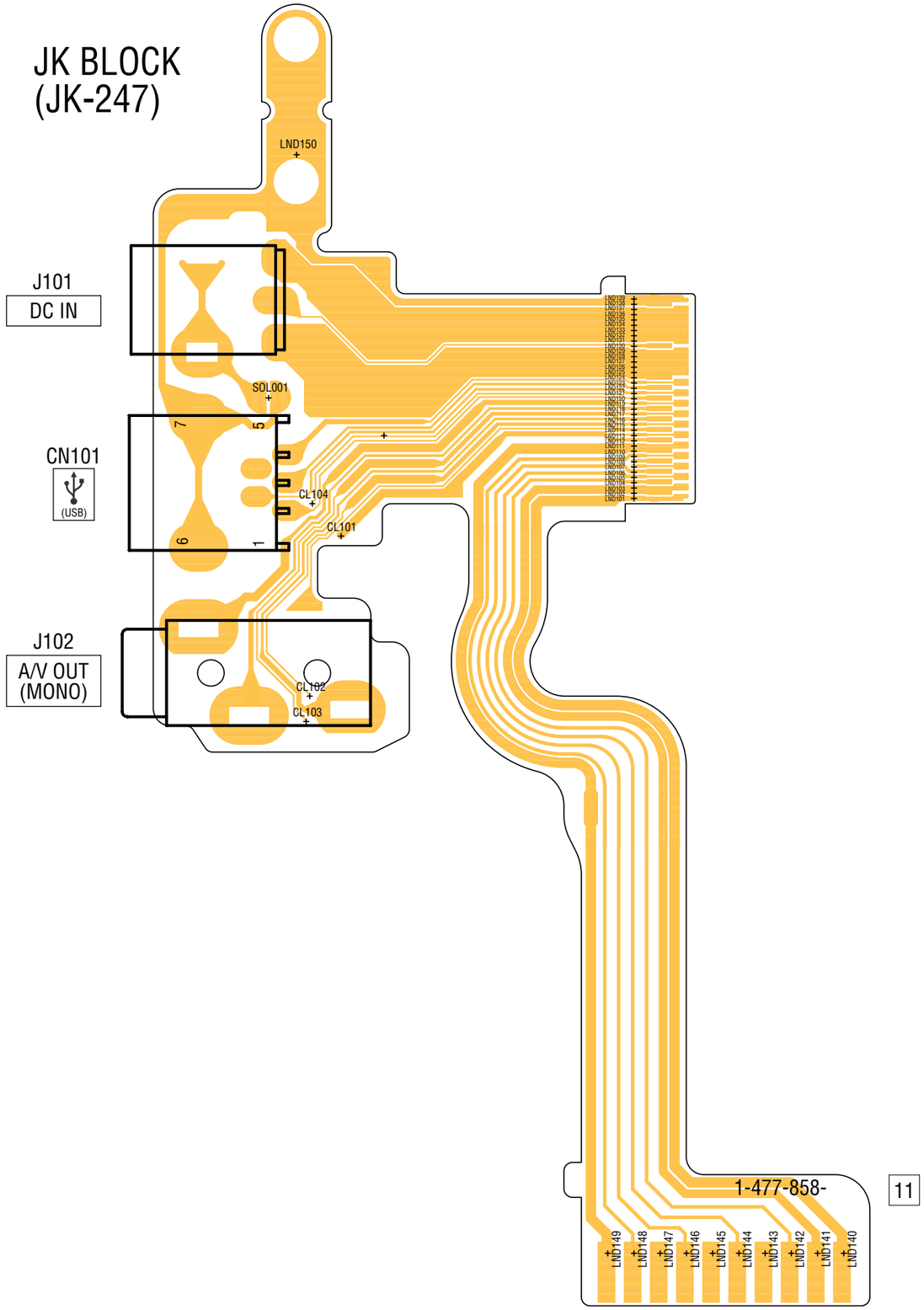


ST-82 BOARD(SIDE B)



Printed wiring board of the SY-84 board are not shown.
Pages from 4-39 to 4-42 are not shown.

JK BLOCK (JK-247) (JACK) FLEXIBLE BOARD



4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

ST-82 BOARD

* C503	A-3
* C504	A-3
* C505	A-4
* C506	A-2
* C507	A-1
C509	A-1
* C510	A-3
* C511	A-4
* C512	A-3
* CN501	A-2
* D502	A-1
* IC501	A-1
L501	A-1
* Q502	A-3
* Q503	A-3
* Q504	A-3
* Q505	A-2
Q506	A-1
* R501	A-2
* R502	A-3
* R503	A-3
* R504	A-3
* R505	A-3
* R506	A-3
* R508	A-4
* R509	A-2
* R510	A-1
* R511	A-1
R512	A-1
* T501	A-4

Mounted parts location of the SY-84 board is not shown.
Page 4-48 is not shown.

COVER

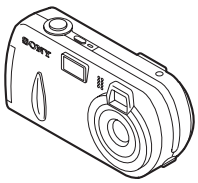
NOTE

5. REPAIR PARTS LIST

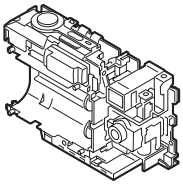
NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS

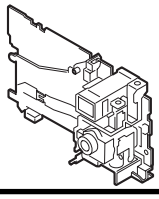


CABINET (FRONT) SECTION



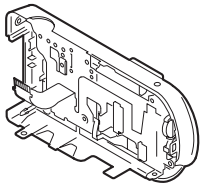
A

MAIN BLOCK ASSEMBLY



B

LENS FRAME BLOCK ASSEMBLY



CABINET (REAR) BLOCK ASSEMBLY

Link

ELECTRICAL PARTS LIST

ACCESSORIES

- SY-84 BOARD B
- ST-82 BOARD A

COVER

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  JE : Tourist model
  CH : Chinese model
  KR : Korea model
  HK : Hong Kong model
  J : Japanese model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

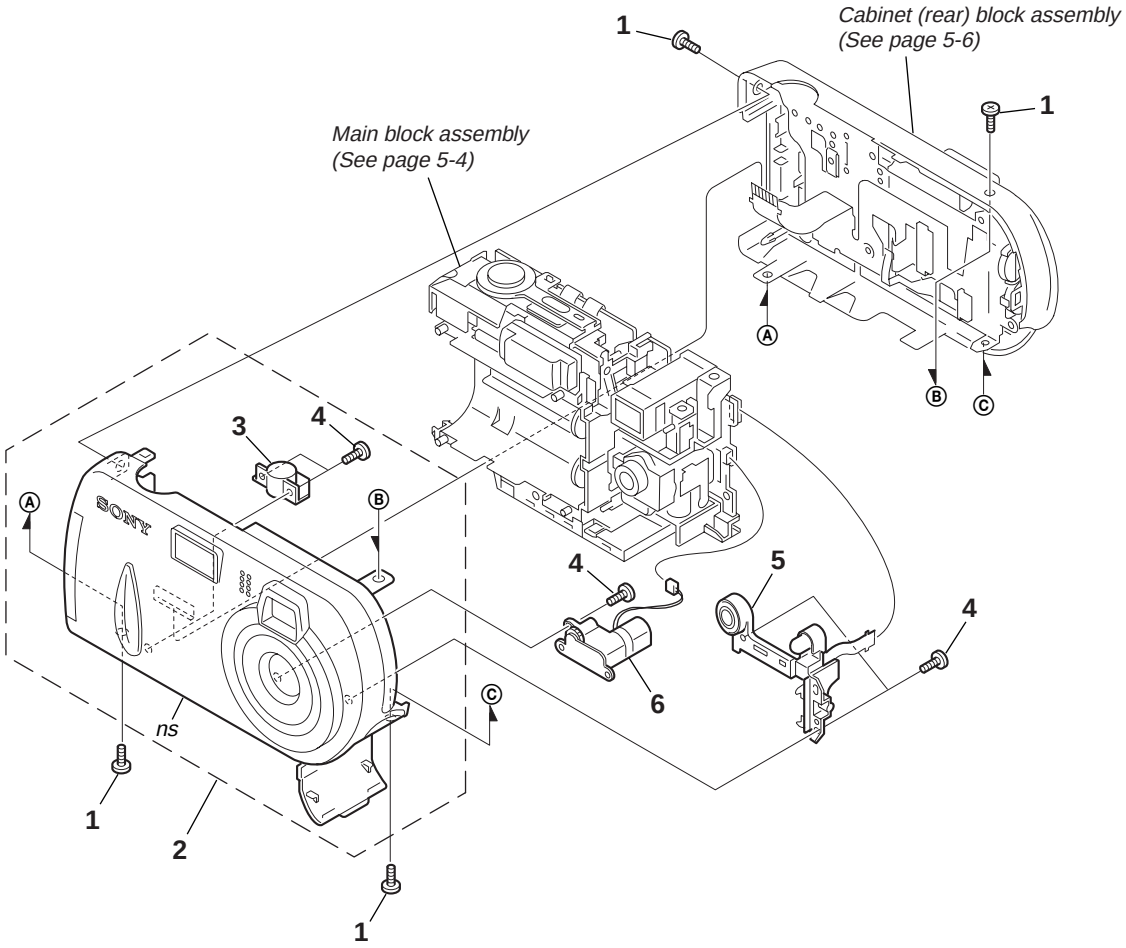
COVER

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. CABINET (FRONT) SECTION

ns : not supplied



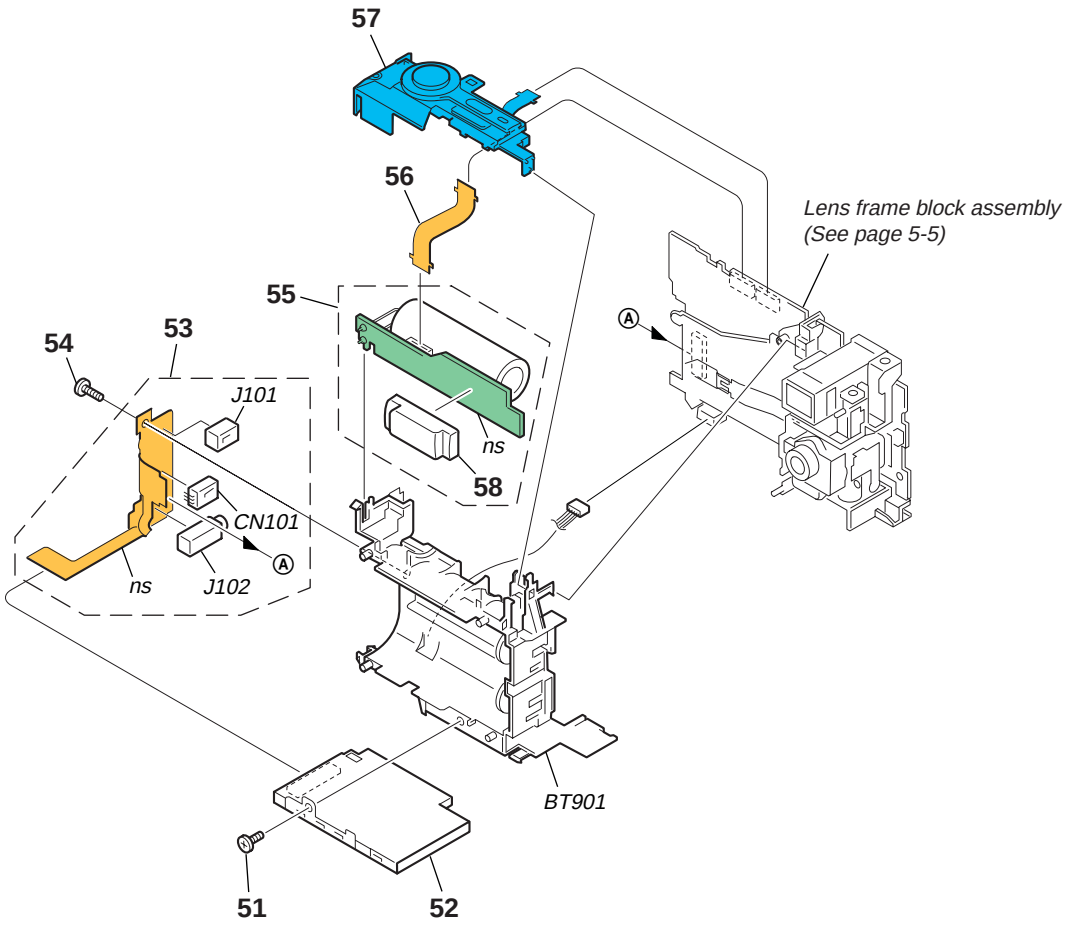
Ref. No.	Part No.	Description	Remarks
1	3-968-729-71	SCREW (M2), LOCK ACE, P2	
2	X-3953-145-™1	CABINET (FRONT) ASSY	
3	3-080-977-01	TRIPOD	
4	3-080-204-21	SCREW, TAPPING, P2	
5	1-477-808-11	PARTS UNIT (UA-001)	
6	1-763-818-21	MOTOR, DC 8C-027G	

COVER

5. REPAIR PARTS LIST

5-1-2. MAIN BLOCK ASSEMBLY

ns : not supplied



Ref. No.	Part No.	Description	Remarks
51	3-078-890-11	SCREW, TAPPING	
52	1-815-853-21	MEMORY STICK CONNECTOR	
53	1-477-858-11	JK BLOCK (JK-247)	
54	3-080-204-21	SCREW, TAPPING, P2	
55	A-7078-600-A	ST-82 (S) BOARD, COMPLETE	
56	1-687-751-11	FP-643 FLEXIBLE BOARD	

Ref. No.	Part No.	Description	Remarks
57	1-477-806-11	CONTROL SWITCH BLOCK (RL-059)	
⚠58	1-477-803-11	FLASH UNIT	
BT901	1-756-346-11	HOLDER, BATTERY(WITH TERMINAL)	
CN101	1-794-962-11	CONNECTOR, SQUARE TYPE(USB 5P)	
J101	1-817-331-11	DC JACK 5P (DC IN)	
J102	1-569-950-31	JACK (SMALL TYPE) (A/V OUT (MONO))	

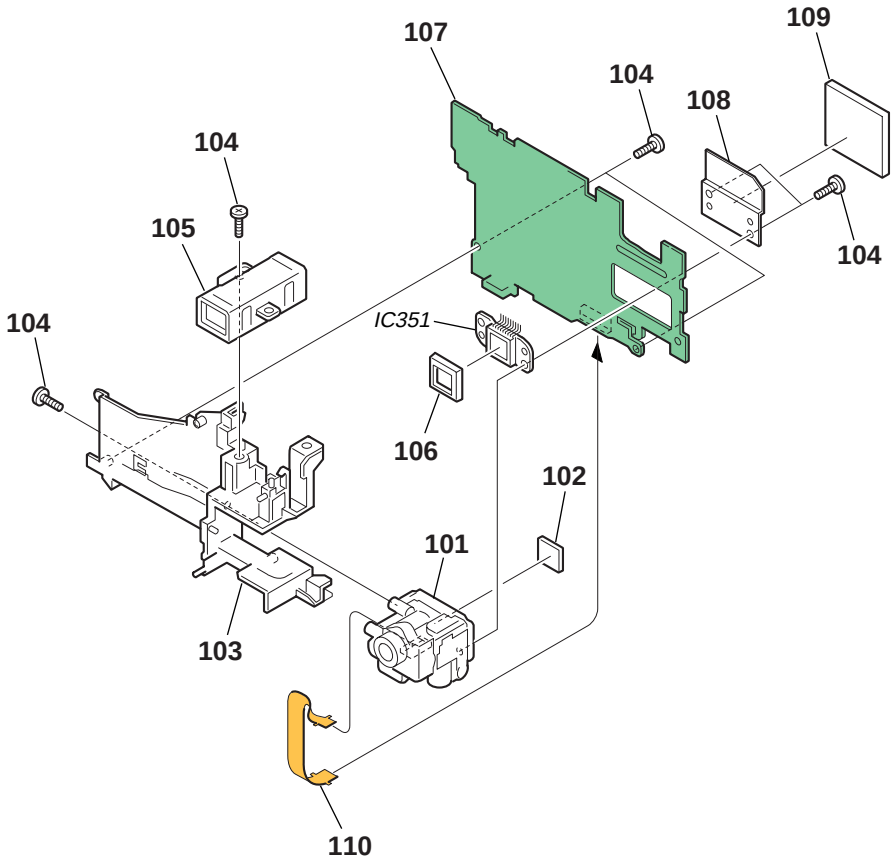
Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

5. REPAIR PARTS LIST

5-1-3. LENS FRAME BLOCK ASSEMBLY

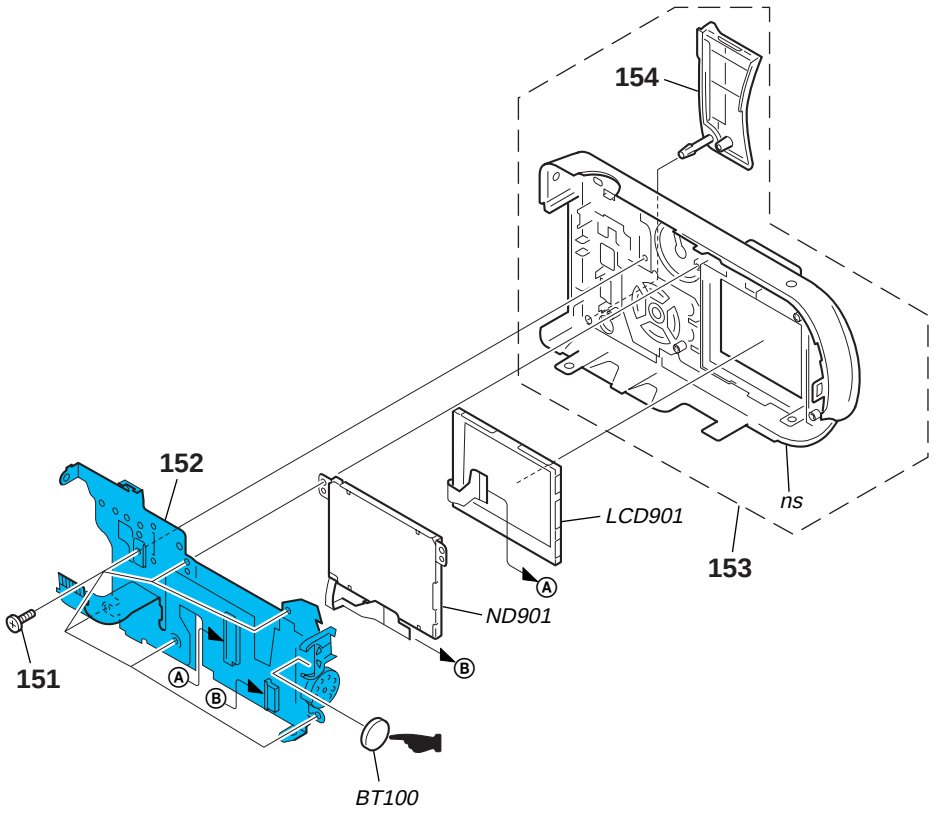


Be sure to read “Precautions upon replacing CCD imager” on page 4-7 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
101	8-848-757-01	LSV-780A	
102	1-758-917-11	FILTER BLOCK, OPTICAL	
103	X-3953-16701	LENS FRAME ASSY	
104	3-080-204-21	SCREW, TAPPING, P2	
105	1-758-897-11	FINDER, OPTICAL (LSV-860A)	
106	3-074-038-01	RUBBER (MM), CCD SEAL	
107	A-7078-685-A	SY-84 BOARD, COMPLETE (SERVICE)	
108	3-082-420-01	HEAT SINK, CCD	
109	3-082-426-01	SHEET, CCD RADIATION	
110	1-687-752-13	FP-644 FLEXIBLE BOARD	
IC351	A-7013-723-A	CCD BLOCK ASSY (CCD IMAGER)	

5-1-4. CABINET (REAR) BLOCK ASSEMBLY

ns : not supplied



: For the installation position of BT100 (Lithium battery), refer to page 2-2.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description	Remarks
151	3-078-890-11	SCREW, TAPPING	
152	1-477-807-11	CONTROL SWITCH BLOCK (SW-390)	
153	X-3953-14401	CABINET (REAR) ASSY	
154	3-080-985-01	COVER, JACK	
⚠ND901	1-477-761-21	BLOCK LIGHT GUIDE PLATE (1.5)	
LCD901	1-805-168-21	INDICATOR MODULE LIQUID CRYST	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	A-7078-685-A	SY-84 BOARD, COMPLETE (SERVICE)
		**********

Electrical parts list of the SY-84 board are not shown.
Pages from 5-7 to 5-12 are not shown.

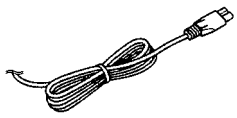
	A-7078-600-A	ST-82 (S) BOARD, COMPLETE			
		**********			
⚠	1-477-803-11	FLASH UNIT			
		< CAPACITOR >			
C503	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C504	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C505	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C506	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C508	1-100-542-11	CAP, ELECT	135uF		
C509	1-137-723-21	CERAMIC CHIP	0.047uF	10%	250V
C510	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C511	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C512	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
		< CONNECTOR >			
CN501	1-816-644-11	FFC/FPC CONNECTOR (LIF) 12P			
		< DIODE >			
D501	8-719-073-01	DIODE MA111-(K8).S0			
⚠D502	6-500-237-01	DIODE HAU160C030TP			
		< IC >			
IC501	6-703-635-01	IC TND721MH5-S-TL-E			
		< COIL >			
⚠L501	1-456-193-11	COIL, TRIGGER			
		< TRANSISTOR >			
Q501	6-550-119-01	TRANSISTOR	DTC144EMT2L		
Q502	6-550-528-01	TRANSISTOR	UPA650TT-E1-A		
Q503	6-550-183-01	TRANSISTOR	CPH3209-SONY-TL-E		
Q504	8-729-056-01	TRANSISTOR	MCH3405-TL-E		
Q505	8-729-053-57	TRANSISTOR	RN1902FE(TPLR3)		
⚠Q506	8-729-053-74	TRANSISTOR	CY25AAJ-8-T13		
		< RESISTOR >			
R501	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R502	1-218-977-11	RES-CHIP	100K	5%	1/16W
R503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R504	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R505	1-218-977-11	RES-CHIP	100K	5%	1/16W
R506	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R507	1-218-965-11	RES-CHIP	10K	5%	1/16W
R508	1-218-940-11	RES-CHIP	82	5%	1/16W
R509	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R510	1-216-805-11	METAL CHIP	47	5%	1/16W
R511	1-216-857-11	METAL CHIP	1M	5%	1/16W
⚠R512	1-216-121-11	RES-CHIP	1M	5%	1/10W
		< TRANSFORMER >			
⚠T501	1-437-737-11	TRANSFORMER, DC-DC CONVERTER			

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

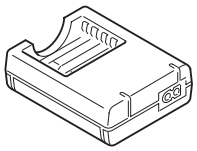
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Checking supplied accessories.

Make sure that the following accessories are supplied with your camcorder.

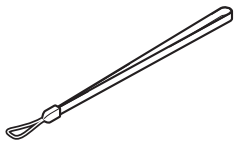


Power cord (1)(AUS model)
⚠ 1-696-819-21
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-779-985-11

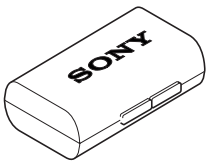


Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-32

Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

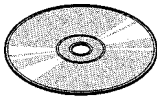


Hand strap (1)
3-070-841-01

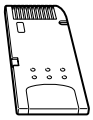


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

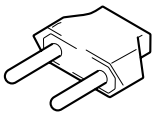


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,
CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

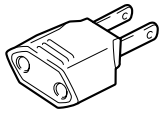


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH
batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

- Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	J	: Japanese model
CH	: Chinese model		

Other accessories

3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH) (US,CND,AEP,UK,E,HK,AUS,CH,JE)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP,JE)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)
3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP,JE)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR,JE)

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-876-228-31

Sony EMCS Co.

2003B1600-1
©2003.2
Published by DI Customer Center

DSC-P32

SONY

LEVEL 2

SERVICE MANUAL

Ver 1.1 2003. 03

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Brazilian Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

SUPPLEMENT-1

File this supplement with the Service Manual.
(PV02-017)

Subject:
Addition of the Brazilian Model.

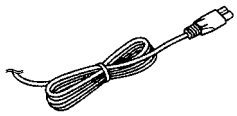
SECTION 5 REPAIR PARTS LIST
5-2. ELECTRICAL PARTS LIST

(Page 5-14E)

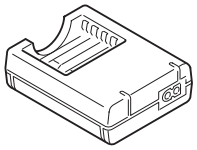
Checking supplied accessories.

☞ : Added portion.

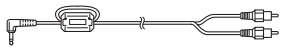
Make sure that the following accessories are supplied with your camcorder.



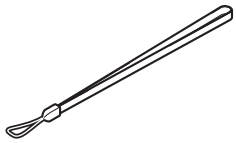
Power cord (1)(AUS model)
⚠ 1-696-819-21
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-779-985-11



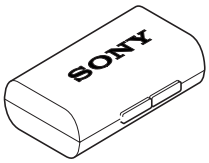
Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS,BR model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-32



Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

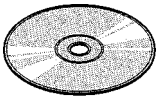


Hand strap (1)
3-070-841-01

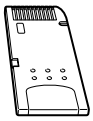


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

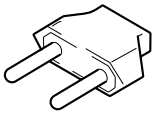


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,BR, CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

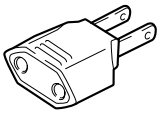


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

• Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	BR	: Brazilian model
CH	: Chinese model	J	: Japanese model

Other accessories

3-080-876-02 MANUAL, INSTRUCTION (OUYOU)(JAPANESE)(J) ☞
3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH) (US,CND,AEP,UK,E,HK,AUS,CH,JE)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP,JE)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)
3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP,JE)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR,JE)

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

2003C1600-1
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Published by DI Customer Center

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.02	Official Release	—	—
1.1	2003.03	Supplement-1	Addition of the Brazilian Model.	No

SECTION 1 SERVICE NOTE

• NOTICE FOR CCD BLOCK ASSY REPLACEMENT

[Remedy]

1. Confirm the resistor value of board.
   SY-84 board (R356)

2. The repair method is different according to the register value of board.

(1) When the register value is 470KΩ.
   It is not necessary to change the register value/data.

(2) When the register value is 1MΩ.

1) Change the register value of board to 470kΩ.
   SY-84 board (R356) 1-218-989-11 (1MΩ) ⇨ 1-218-985-11 (470KΩ)
2) Change data too as follows.

		1MΩ		470KΩ
Page	Address	Data		Data
79	0C	90		92
79	10	27		40
79	11	D8	⇨	00
77	70	0E		10
6F	04	04		11

SECTION 5 REPAIR PARTS LIST

5-1. EXPLODED VIEWS

: Changed portion

Page	Before change			After change		
5-5	**5-1-3. LENS FRAME BLOCK ASSEMBLY**					
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	IC351	A-7013-723-A	CCD BLOCK ASSY (CCD IMAGER)	IC351	A-7095-744-A	CCD BLOCK ASSY (CCD IMAGER)

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.02	Official Release	—	—
1.1	2003.03	Supplement-1	Addition of the Brazilian Model.	No
1.2	2005.09	Supplement-2 (PV05-051)	• Addition of SERVICE NOTE (Notice for CCD BLOCK ASSY replacement) • Change of repair parts list	No

DSC-P72

SERVICE MANUAL

LEVEL 2

Ver 1.0 2003. 02
Revision History

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Hong Kong Model
Korea Model
Chinese Model
Tourist Model
Japanese Model

Link

SPECIFICATIONS	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST
DISASSEMBLY	SCHEMATIC DIAGRAMS	

- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL 1 (987622941.pdf).
- Reference No. search on printed wiring boards is available.

On the SY-85 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the SY-85 board.
Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the SY-85 board are not shown.
The following pages are not shown.

Schematic diagram ..... Pages 4-7 to 4-26
Printed wiring board ..... Pages 4-39 to 4-42
Waveforms ..... Pages 4-45 to 4-46
Mounted parts location ..... Page 4-48
Electrical parts list ..... Pages 5-6 to 5-11

DIGITAL STILL CAMERA

SONY®

DSC-P72

COVER

Self Diagnosis Supported model

Cyber-shot Digital Still Camera

MEMORY STICK

SPECIFICATIONS

■ Camera

[System]

Image device 6.67 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera
Approx. 3 340 000 pixels

Effective pixels number of camera
Approx. 3 210 000 pixels

Lens 3× zoom lens
f=6.0 to 18.0 mm
(35 mm camera conversion: 39 to 117mm (1 $^{9}/_{16}$ to 4 $^{5}/_{8}$ inches))
F2.8-5.6

Exposure control
Automatic, Program, Twilight, Twilight portrait, Landscape, Snow, Beach

White balance Automatic, Daylight, Cloudy, Fluorescent, Incandescent

File format (DCF compliant)
Still images: Exif Ver. 2.2, JPEG compliant, GIF (for Clip Motion), DPOF compatible
Audio with still image: MPEG1 compliant (Monaural)
Movies: MPEG1 compliant (Monaural)

Recording media
"Memory Stick"

Flash Recommended distance
0.5 to 3.8 m (19 $^{3}/_{4}$ inches to 12 feet 5 $^{19}/_{32}$ inches) (W)/
0.5 to 2.5 m (19 $^{3}/_{4}$ inches to 8 feet 2 $^{7}/_{16}$ inches)

[Output connectors]

A/V OUT (MONO) jack (Monaural)
Minijack
Video: 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio: 327 mV (at a 47 kΩ load)
Output impedance 2.2 kΩ

USB jack mini-B

[LCD screen]

LCD panel used
3.8 cm (1.5 type) TFT drive

Total number of dots
123 200 (560×220) dots

[Power, general]

Power AA nickel hydride batteries (2)
2.4 V
AC-LS5 AC Adaptor (not supplied), 4.2 V

Power consumption (when recording)
1.7W

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions 119.5 × 57.7 × 32.6 mm
(4 $^{3}/_{4}$ × 2 $^{3}/_{8}$ × 1 $^{5}/_{16}$ inches) (W/H/D, protruding portions not included)

Mass Approx. 259 g (9.1 oz) (two batteries, "Memory Stick" and wrist strap included)

Microphone Electret condenser microphone

Speaker Dynamic speaker

■ BC-CS2A/CS2B Ni-MH battery charger

Power requirements
AC 100 to 240V 50/60Hz
3 W

Output voltage
AA : DC 1.4 V 400 mA × 2
AAA : DC 1.4 V 160 mA × 2

Operating temperature range
0° to +40°C (32° to +104°F)

Dimensions 71 × 30 × 91 mm
(2 $^{7}/_{8}$ × 1 $^{3}/_{16}$ × 3 $^{5}/_{8}$ inches) (W/H/D)

Mass Approx. 90 g (3 oz)

■ AC-LS5 AC Adaptor (not supplied)

Power requirements
AC 100 to 240 V, 50/60 Hz
11 W 0.16 to 0.09 A

Rated output voltage
DC 4.2 V, 1.5 A

Operating temperature range
0° to +40°C (32° to +104°F)

Storage temperature range
–20° to +60°C (–4° to +140°F)

Dimensions 48 × 29 × 81 mm (1 $^{15}/_{16}$ × 1 $^{3}/_{16}$ 3 $^{1}/_{4}$ inches) (W/H/D, protruding parts not included)

Mass Approx. 180 g (6 oz)
(adaptor only)

Accessories

HR6 (size AA) Ni-MH batteries (2)
Battery case
BC-CS2A/CS2B Ni-MH Battery charger (1)
Power cord (mains lead) (1)
USB cable (1)
A/V connecting cable (1)
Wrist strap (1)
"Memory Stick" (16MB) (1)
CD-ROM (USB driver: SPVD-010) (1)
Operating Instructions (1)

Design and specifications are subject to change without notice.

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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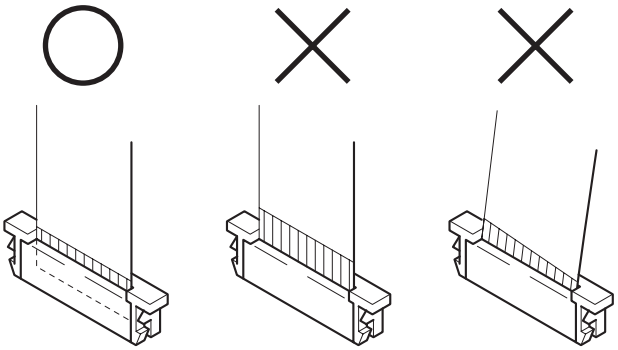
Parts list of the SY-85 board are not shown.
Pages from 5-6 to 5-11 are not shown.

COVER

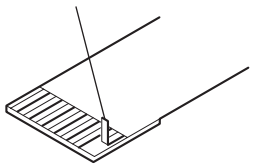
SECTION 1
SERVICE NOTE

• NOTE FOR REPAIR

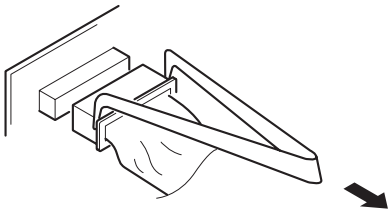
Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



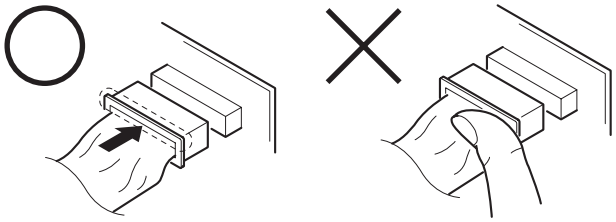
Cut and remove the part of gilt which comes off at the point. (Take care that there are some pieces of gilt left inside)



When remove a connector, don't pull at wire of connector. Be in danger of the snapping of a wire.



When installing a connector, don't press down at wire of connector. Be in danger of the snapping of a wire.

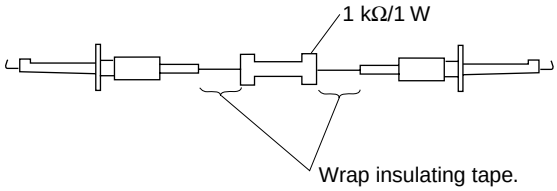


[Discharging of the FLASH unit's charging capacitor]

The charging capacitor of the FLASH unit is charged up to the maximum 300 V potential.
There is a danger of electric shock by this high voltage when the capacitor is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the DSC-P72 is simply turned off. Therefore, the remaining voltage must be discharged as described below.

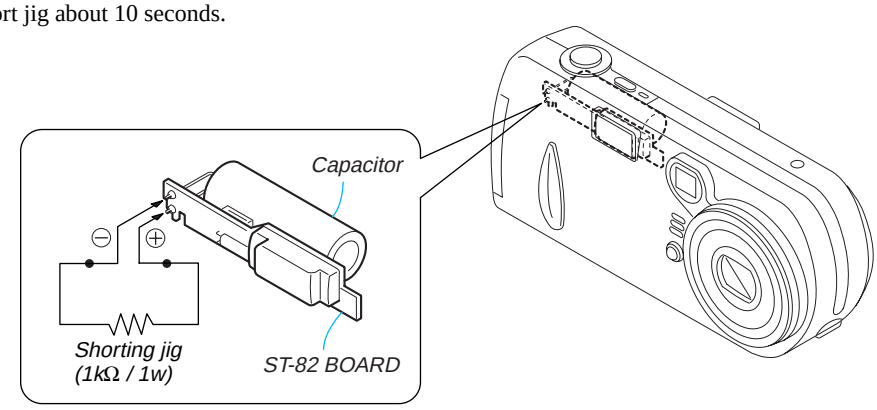
Preparing the Short Jig

To preparing the short jig. a small clip is attached to each end of a resistor of 1 kΩ /1 W (1-215-869-11)
Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



Discharging the Capacitor

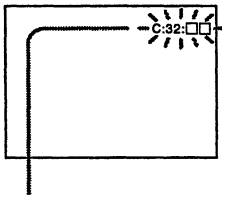
Short circuits between the positive and the negative terminals of charged capacitor with the short jig about 10 seconds.



[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□: □□
  The contents which can be handled by customer, are displayed.
- E: □□: □□
  The contents which can be handled by engineer, are displayed.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:01	Turn off the main power then back on.	Trouble with hardware.	SYSTEM ERROR
C:13:01	Replace the memory stick. Format the memory stick with the DSC-P72.	• The type of memory stick that cannot be used by this machine, is inserted. • Data is damaged. • Unformatted memory stick is inserted.	MS ERROR
E:91:01	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	Flash LED Flash display Flashing at 3.2 Hz
E:61:00 *1	Checking of lens drive circuit	When failed in the focus initialization.	—
E61:10 *1			

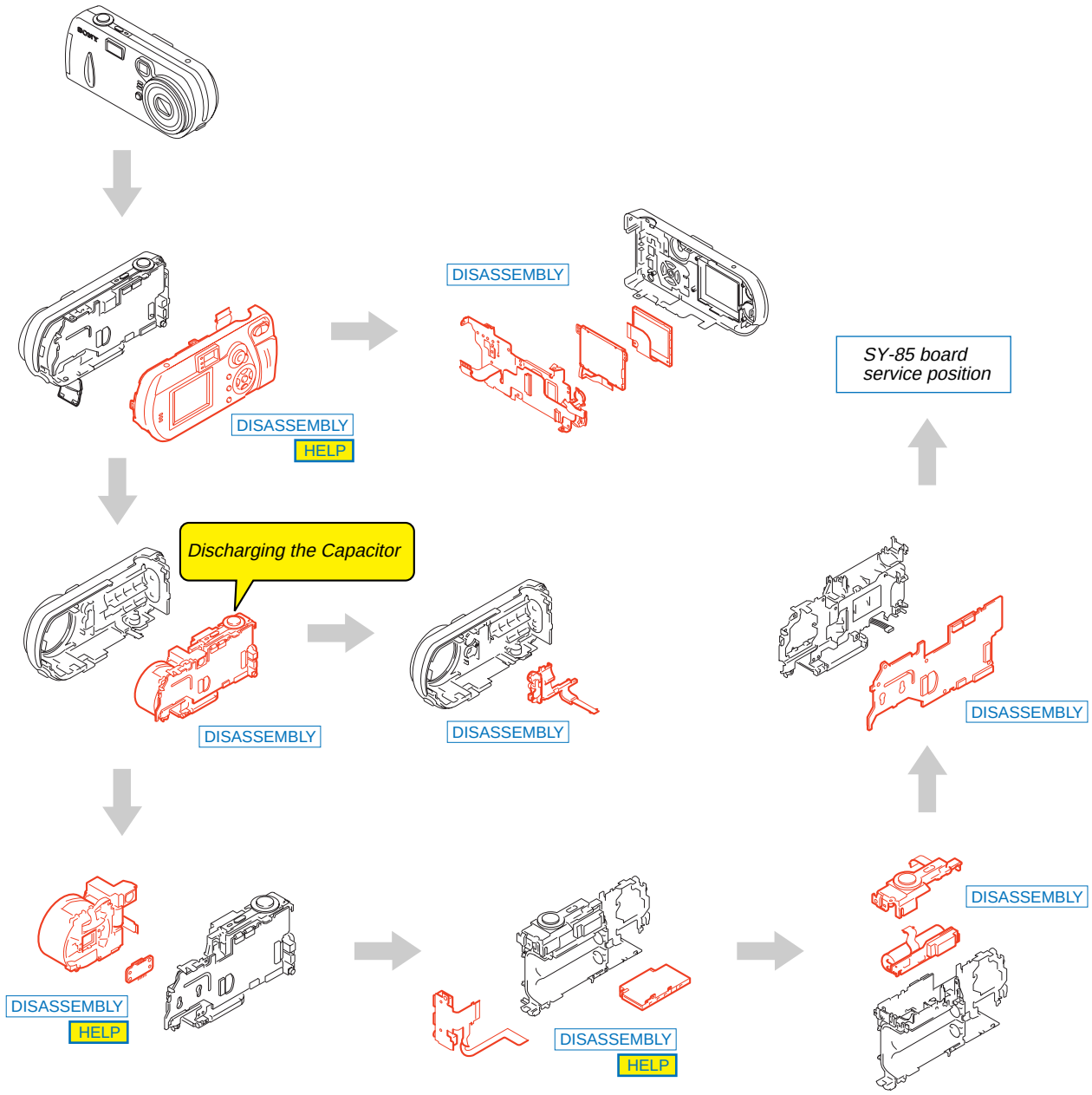
Note : The error code is cleared if the battery is removed, except defective flash unit.
*1: The error display is given in two ways.

COVER

SECTION 2
DISASSEMBLY

HELP

The following flow chart shows the disassembly procedure.



PROCEDURE OF REMOVING SY-85 BOARD

① 2-1. CABINET (R) BLOCK ASSEMBLY ..... (page 2-2)
② 2-2. BLOCK LIGHT GUIDE PLATE, LCD MODULE, CONTROL SWITCH BLOCK (SW-391) ..... (page 2-3)
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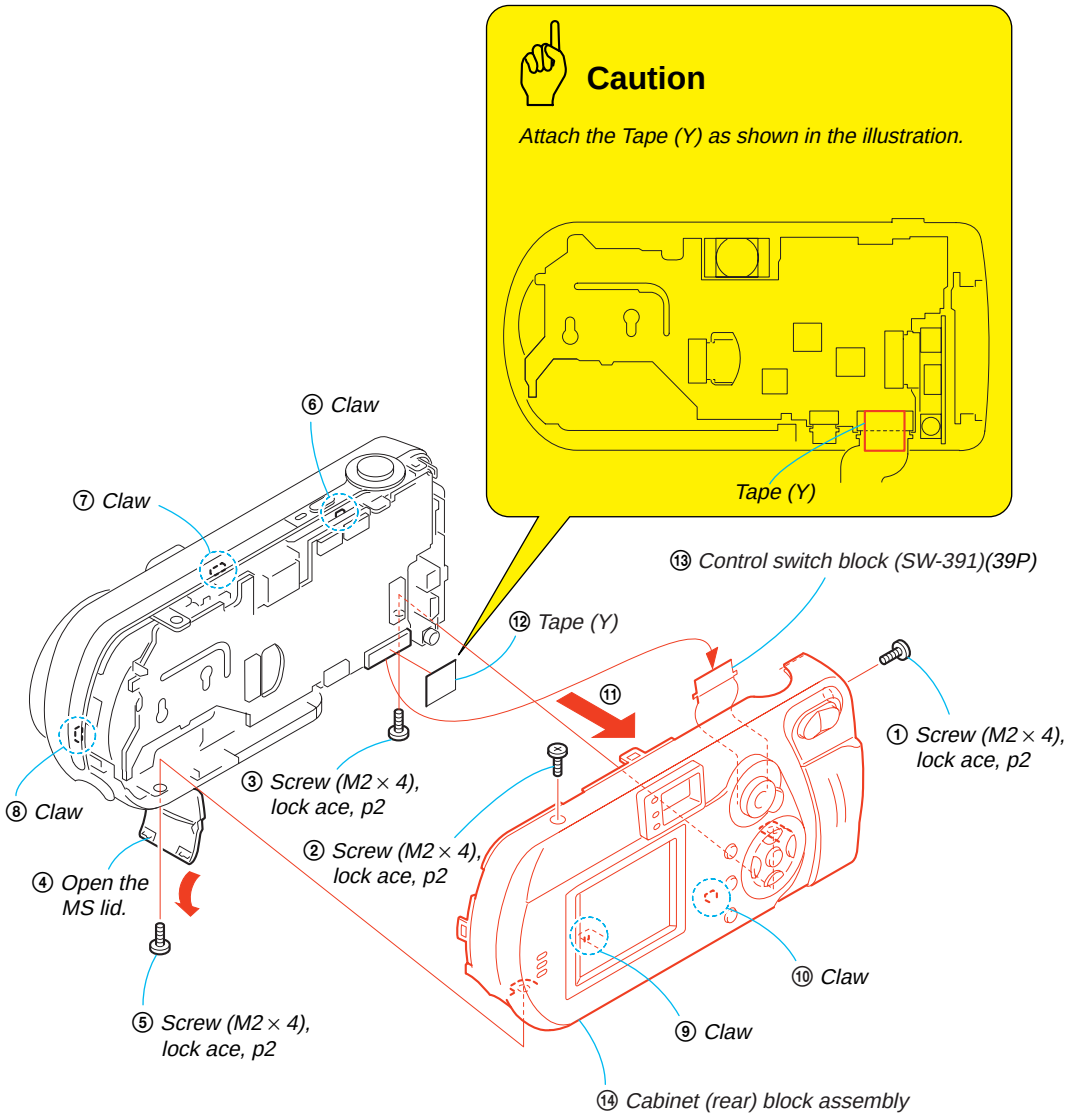
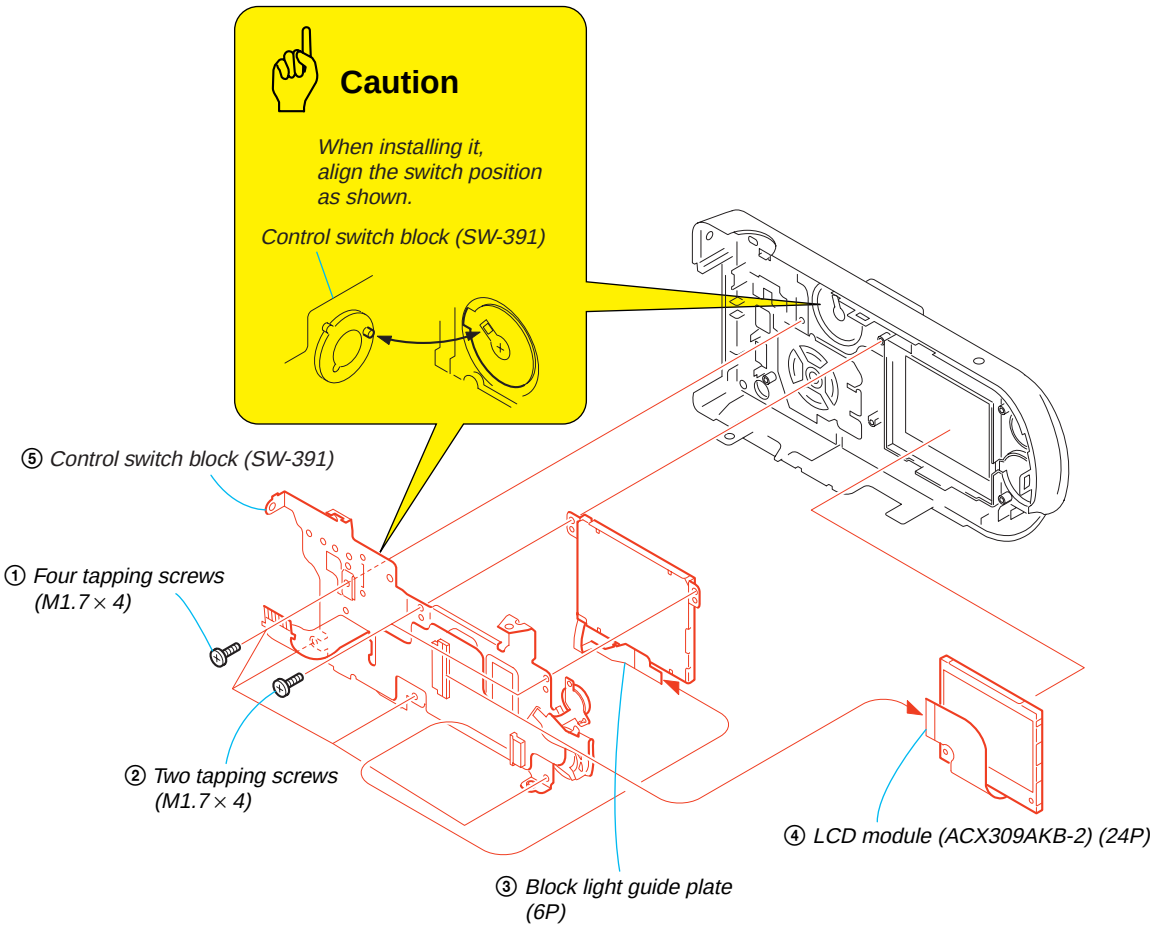
⑦ 2-7. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD .... (page 2-6)
⑧ 2-8. SY-85 BOARD ..... (page 2-7)

NOTE: Follow the disassembly procedure in the numerical order given.

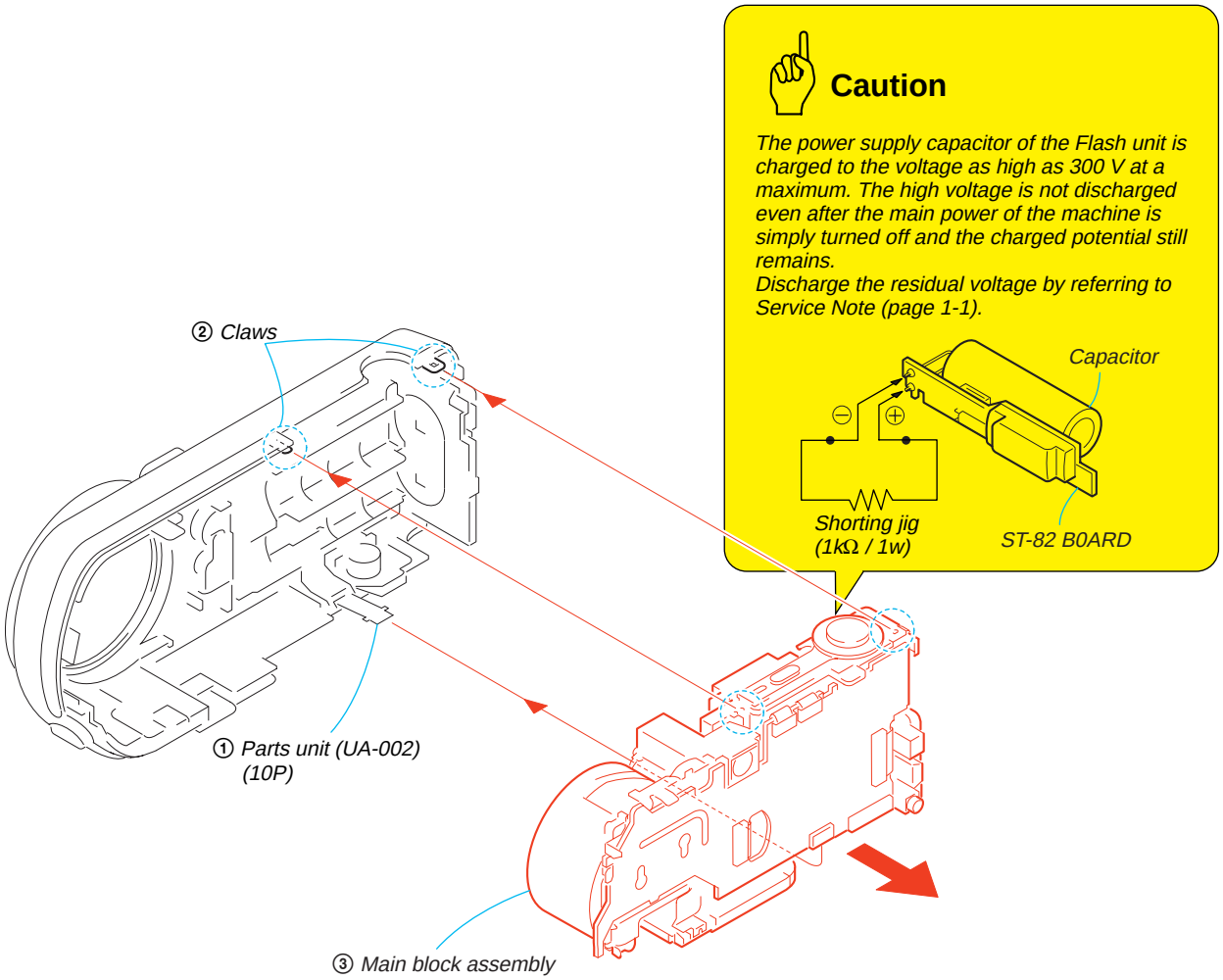
2-1. CABINET (R) BLOCK ASSEMBLY


Caution
Attach the Tape (Y) as shown in the illustration.
Tape (Y)
⑥ Claw
⑦ Claw
⑧ Claw
⑫ Tape (Y)
⑬ Control switch block (SW-391)(39P)
⑪
① Screw (M2 × 4), lock ace, p2
③ Screw (M2 × 4), lock ace, p2
② Screw (M2 × 4), lock ace, p2
④ Open the MS lid.
⑤ Screw (M2 × 4), lock ace, p2
⑩ Claw
⑨ Claw
⑭ Cabinet (rear) block assembly

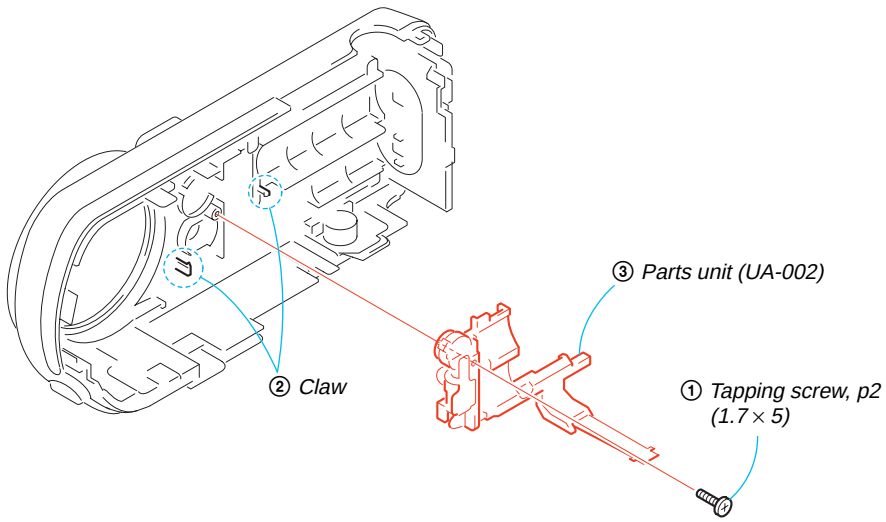
2-2. BLOCK LIGHT GUIDE PLATE, LCD MODULE, CONTROL SWITCH BLOCK (SW-391)


Caution
When installing it, align the switch position as shown.
Control switch block (SW-391)
⑤ Control switch block (SW-391)
① Four tapping screws (M1.7 × 4)
② Two tapping screws (M1.7 × 4)
③ Block light guide plate (6P)
④ LCD module (ACX309AKB-2) (24P)

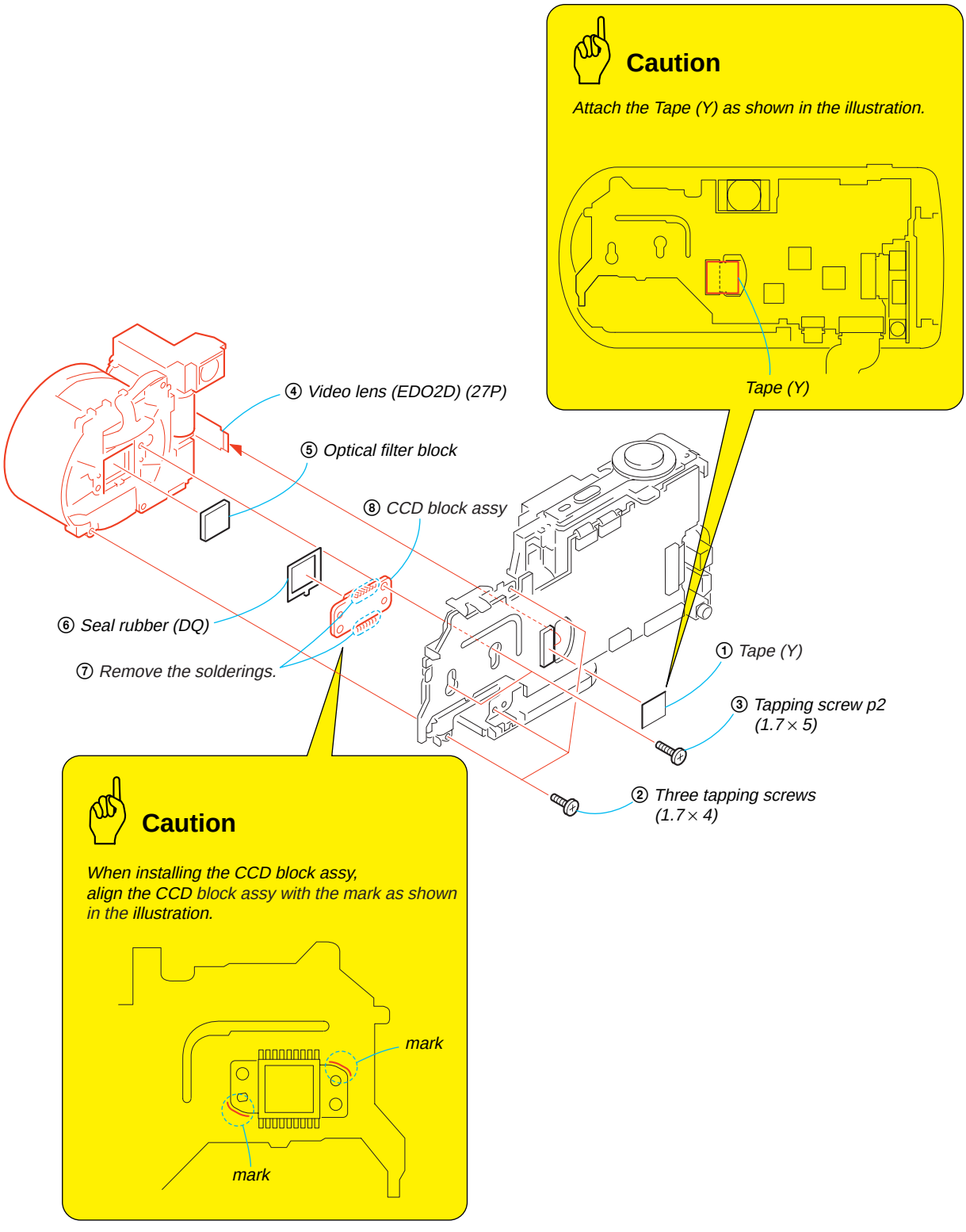
2-3. MAIN BLOCK ASSEMBLY


Caution
The power supply capacitor of the Flash unit is charged to the voltage as high as 300 V at a maximum. The high voltage is not discharged even after the main power of the machine is simply turned off and the charged potential still remains.
Discharge the residual voltage by referring to Service Note (page 1-1).
Capacitor
Shorting jig
(1kΩ / 1w)
ST-82 B0ARD
② Claws
① Parts unit (UA-002)
(10P)
③ Main block assembly

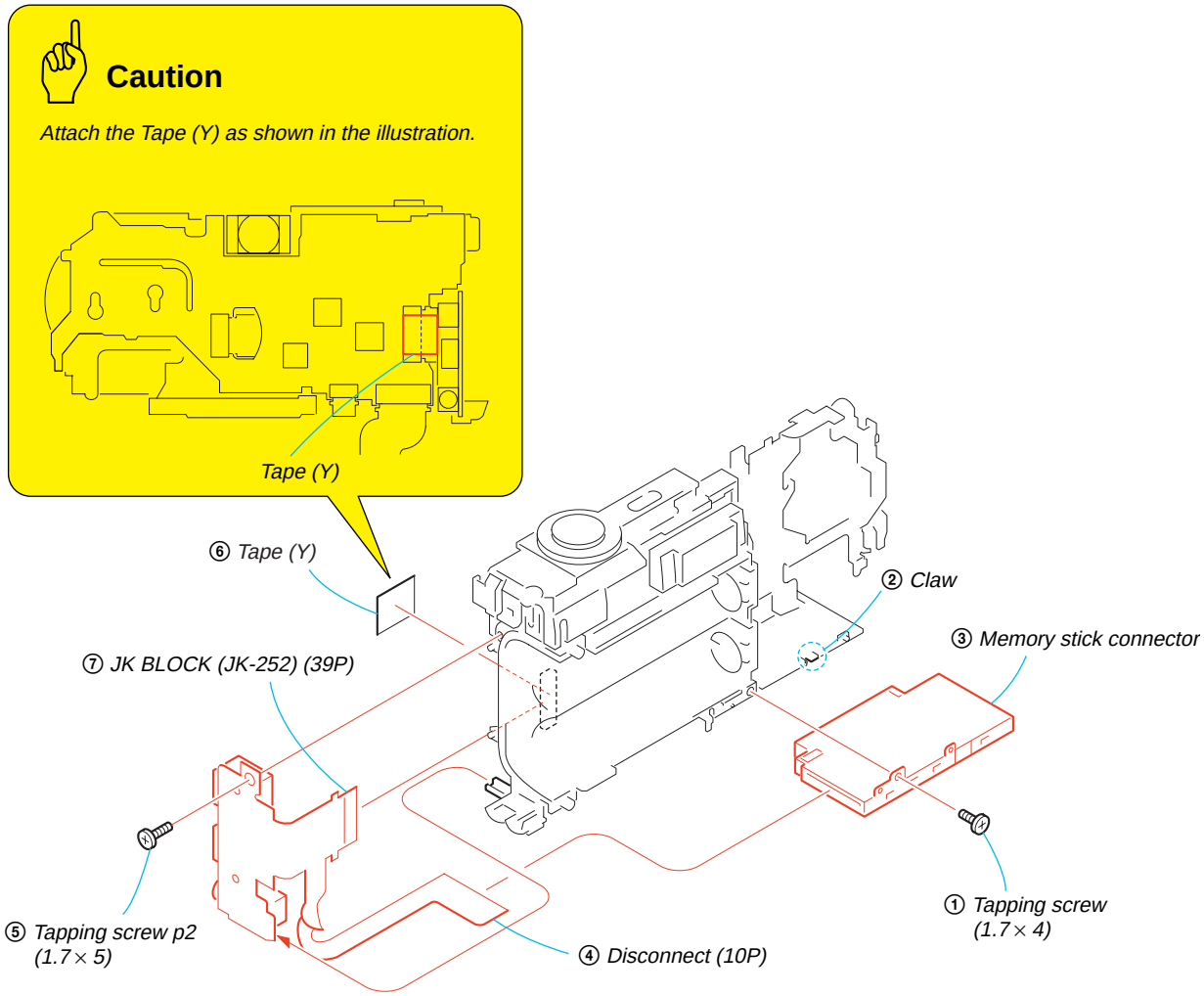
2-4. PARTS UNIT (UA-002)



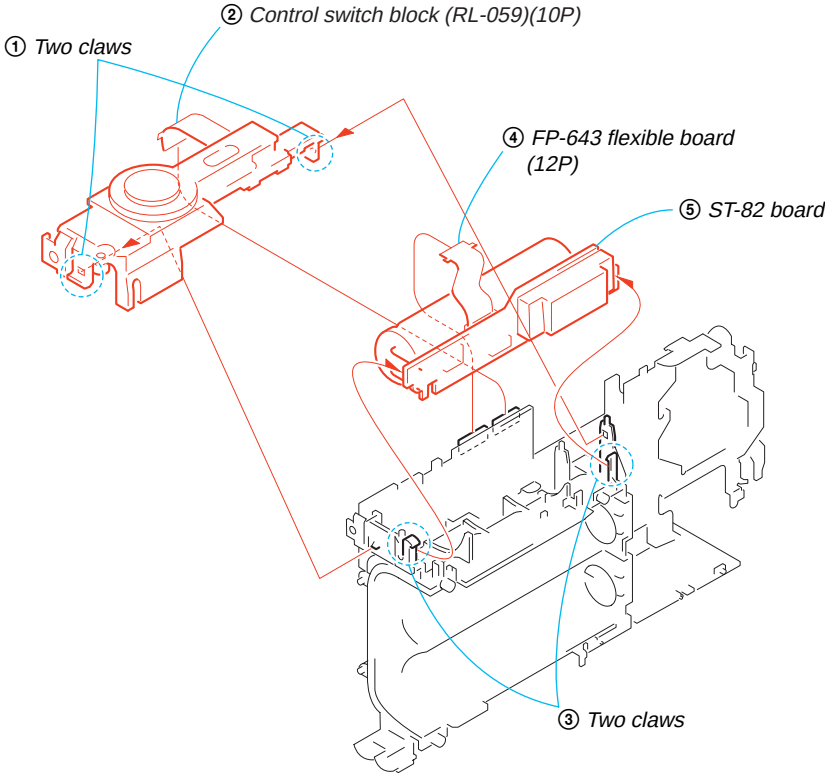
2-5. VIDEO LENS, CCD BLOCK ASSEMBLY


Caution
Attach the Tape (Y) as shown in the illustration.
Tape (Y)
④ Video lens (EDO2D) (27P)
⑤ Optical filter block
⑧ CCD block assy
⑥ Seal rubber (DQ)
⑦ Remove the solderings.
① Tape (Y)
③ Tapping screw p2 (1.7 × 5)
② Three tapping screws (1.7 × 4)
Caution
When installing the CCD block assy, align the CCD block assy with the mark as shown in the illustration.
mark
mark

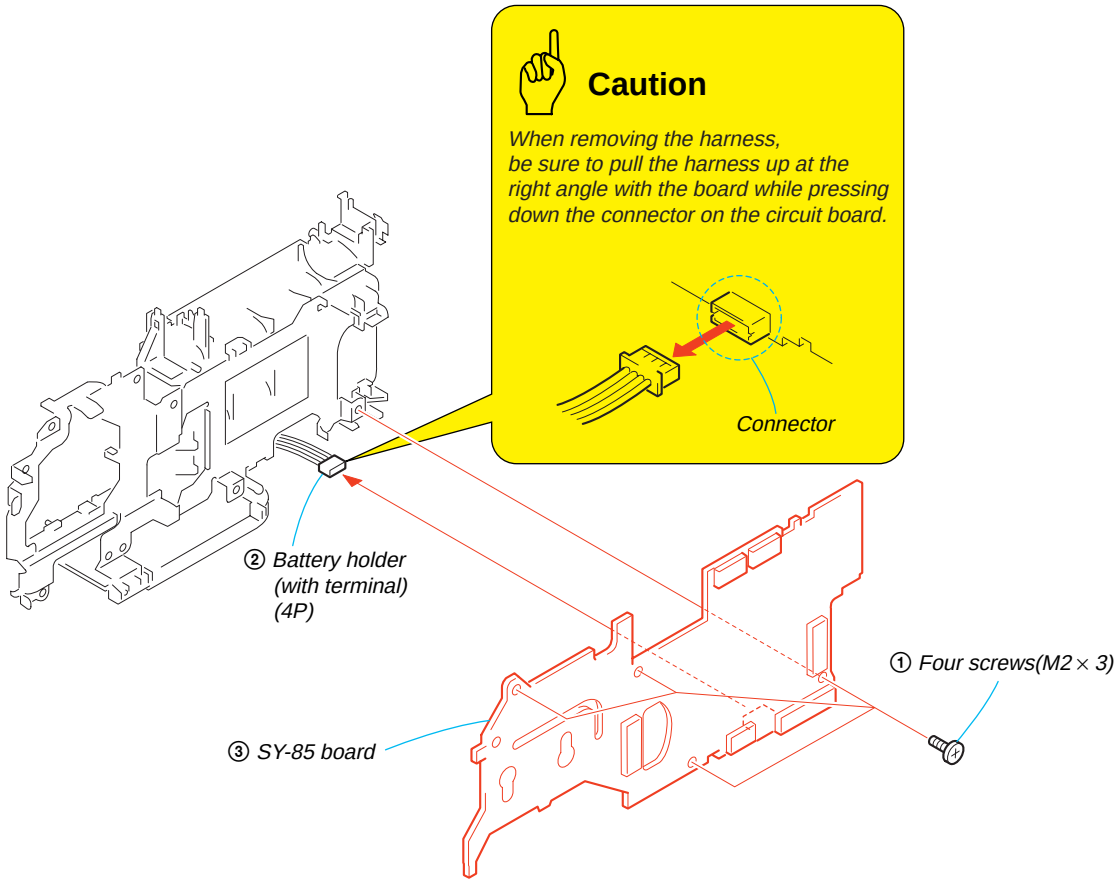
2-6. MEMORY STICK CONNECTOR, JK BLOCK (JK-252)


Caution
Attach the Tape (Y) as shown in the illustration.
Tape (Y)
⑥ Tape (Y)
② Claw
③ Memory stick connector
⑦ JK BLOCK (JK-252) (39P)
⑤ Tapping screw p2 (1.7× 5)
④ Disconnect (10P)
① Tapping screw (1.7× 4)

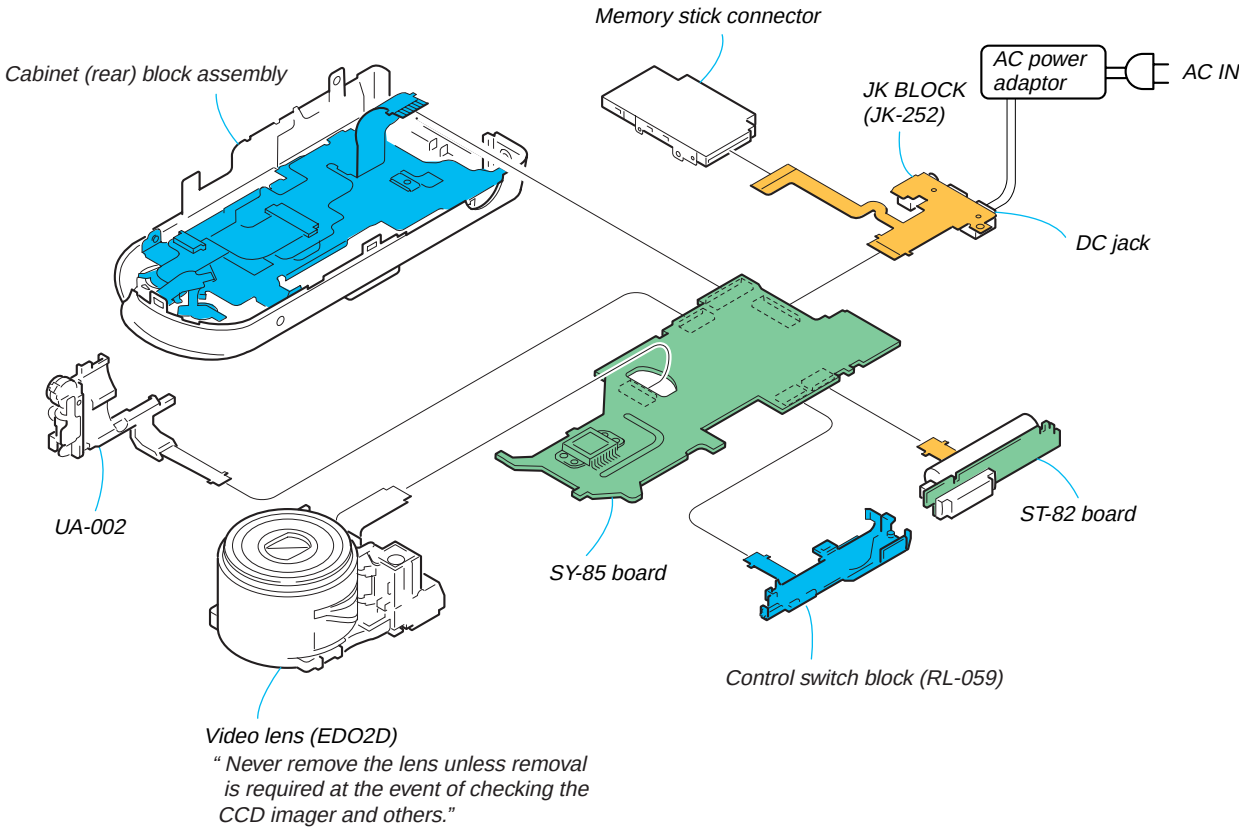
2-7. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD



2-8. SY-85 BOARD



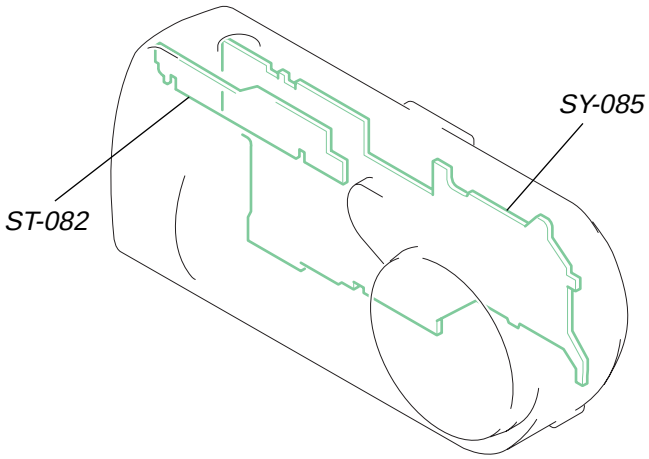
[SERVICE POSITION (SY-85 BOARD)]


Memory stick connector
Cabinet (rear) block assembly
AC power adaptor
AC IN
JK BLOCK (JK-252)
DC jack
UA-002
SY-85 board
ST-82 board
Control switch block (RL-059)
Video lens (EDO2D)
" Never remove the lens unless removal is required at the event of checking the CCD imager and others."

PROCEDURE OF REMOVING SY-85 BOARD

① 2-1. CABINET (R) BLOCK ASSEMBLY ..... (page 2-2)
② 2-2. BLOCK LIGHT GUIDE PLATE, LCD MODULE, ... (page 2-3)
CONTROL SWITCH BLOCK (SW-391)
③ 2-3. MAIN BLOCK ASSEMBLY ..... (page 2-4)
④ 2-4. PARTS UNIT (UA-002) ..... (page 2-4)
⑤ 2-5. VIDEO LENS, CCD BLOCK ASSEMBLY ..... (page 2-5)
⑥ 2-6. MEMORY STICK CONNECTOR, JK BLOCK (JK-252) .... (page 2-6)
⑦ 2-7. CONTROL SWITCH BLOCK (RL-059), ST-82 BOARD .... (page 2-6)
⑧ 2-8. SY-85 BOARD ..... (page 2-7)

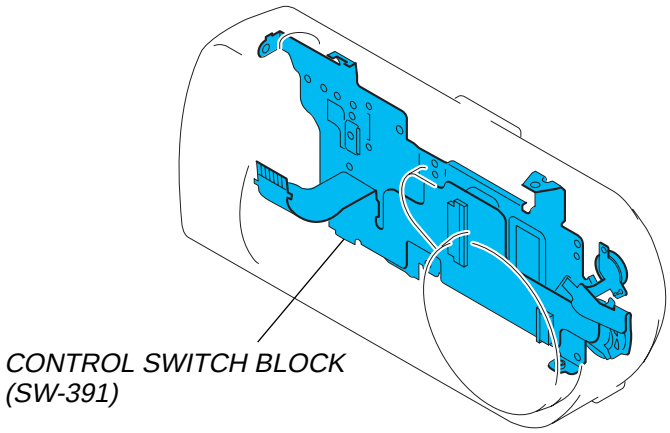
2-9. CIRCUIT BOARDS LOCATION

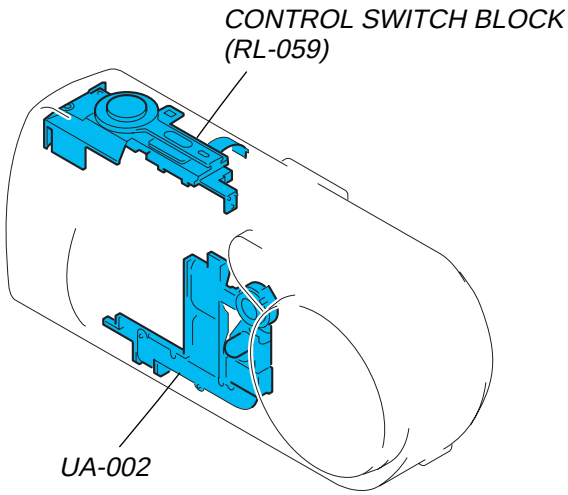


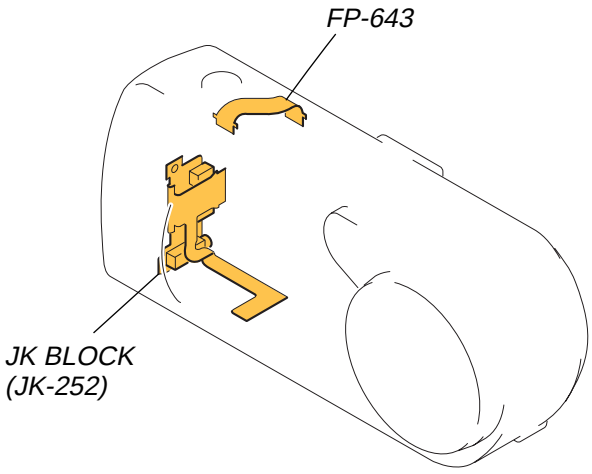
Board Name	Function
SY-085	CCD IMAGER, CAMERA A/D CONVERTER, LENS DRIVE, CAMERA DSP, VIDEO AMP, SH DSP, CLK GEN., FRONT CONTROL, AUDIO I/O, LCD DRIVE, TIMING GEN., DC IN, DC-DC CONVERTER., CONNECTOR
ST-082	FLASH DRIVE

2-10. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the lens device are not shown.





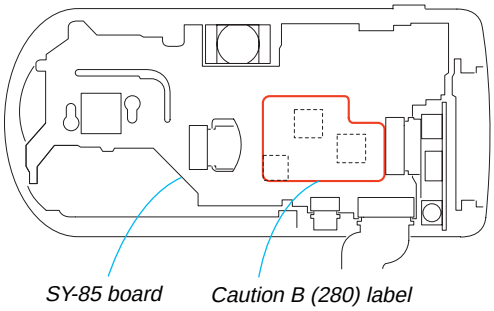


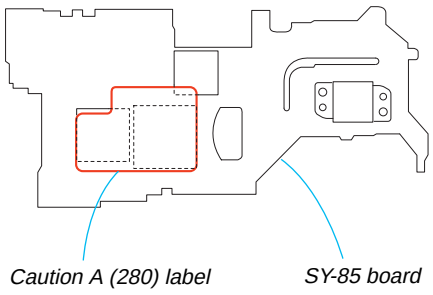
17/Feb/2003. Update

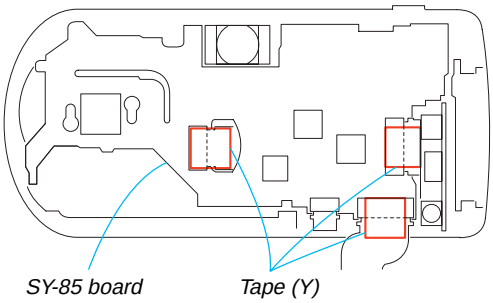
HELP

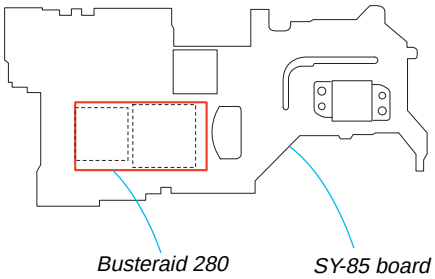
Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

MAIN BLOCK SECTION









COVER

3. BLOCK DIAGRAMS

Link

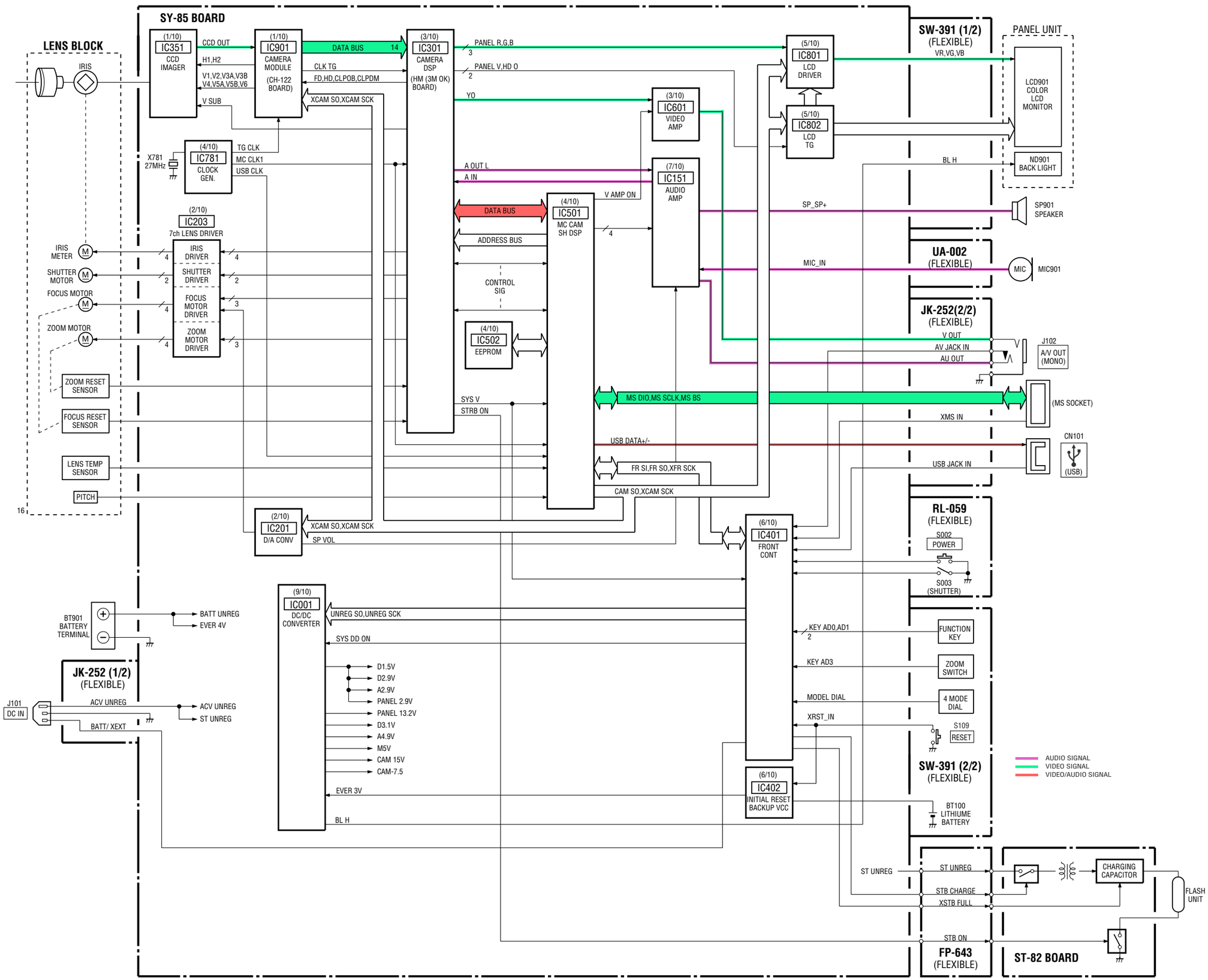
- OVERALL BLOCK DIAGRAM
- FRONT/LCD BLOCK DIAGRAM
- CAMERA BLOCK DIAGRAM
- POWER BLOCK DIAGRAM

COVER

SECTION 3
BLOCK DIAGRAMS

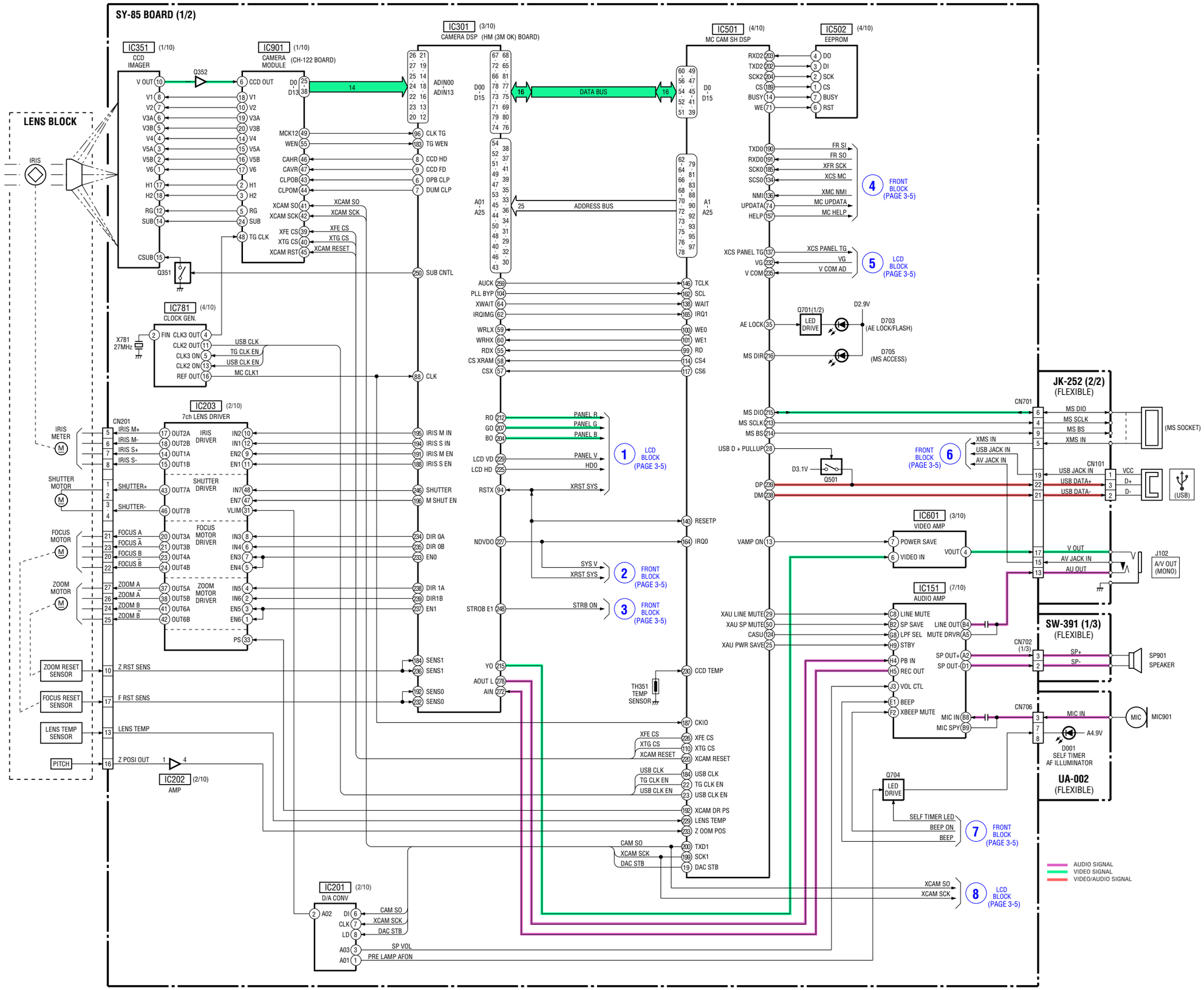
3-1. OVERALL BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



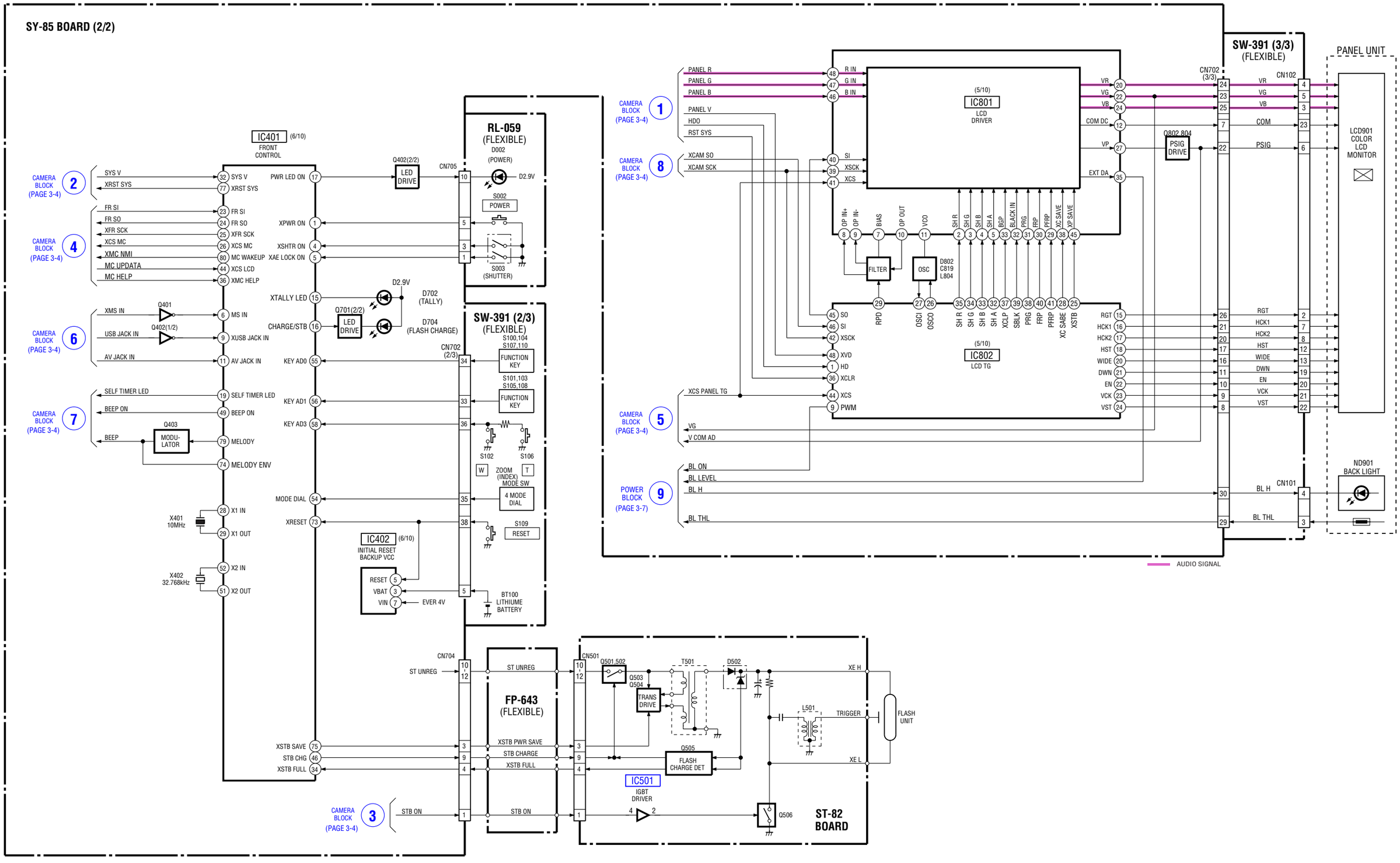
3-2. CAMERA BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



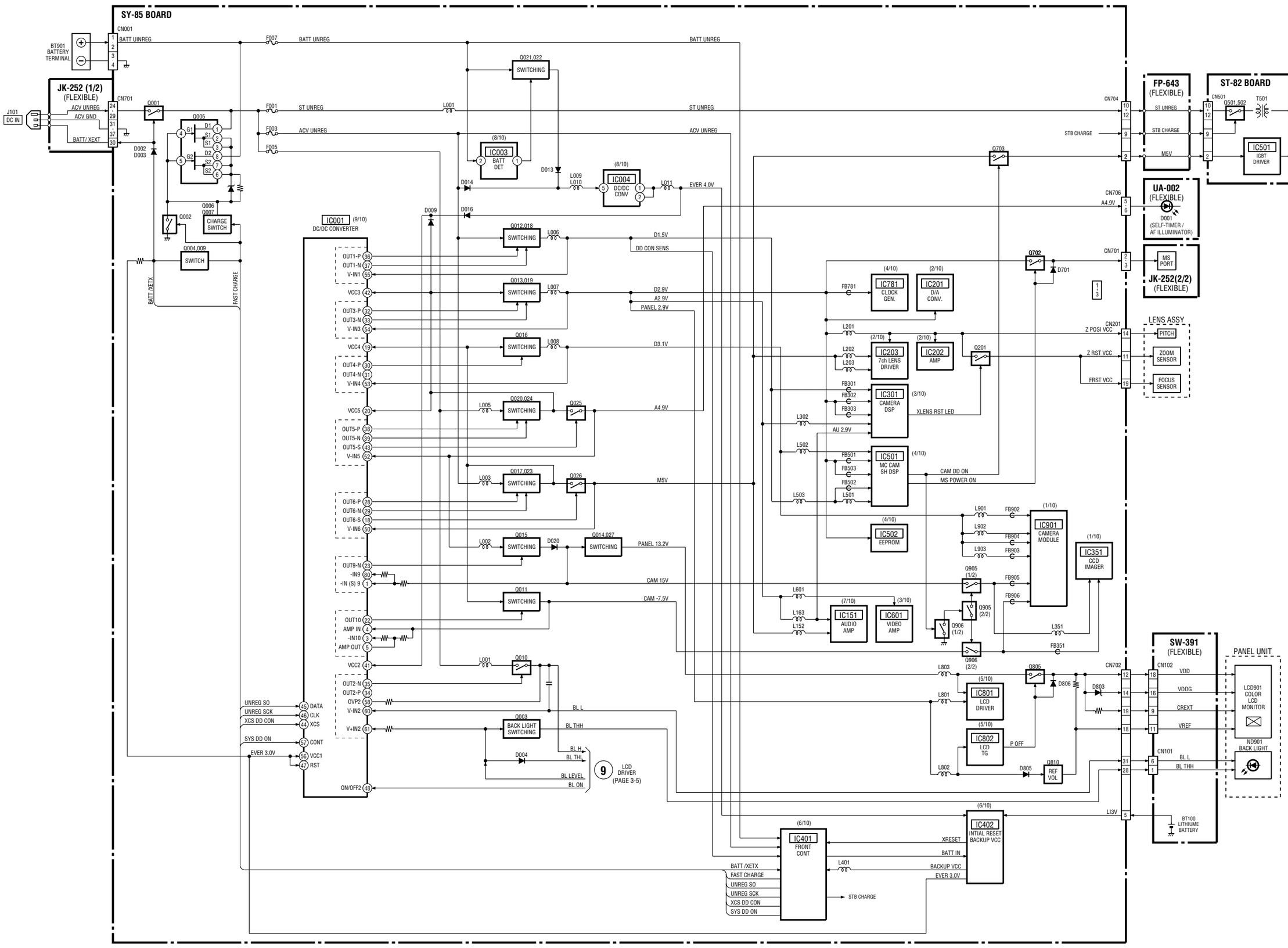
3-3. FRONT/LCD BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



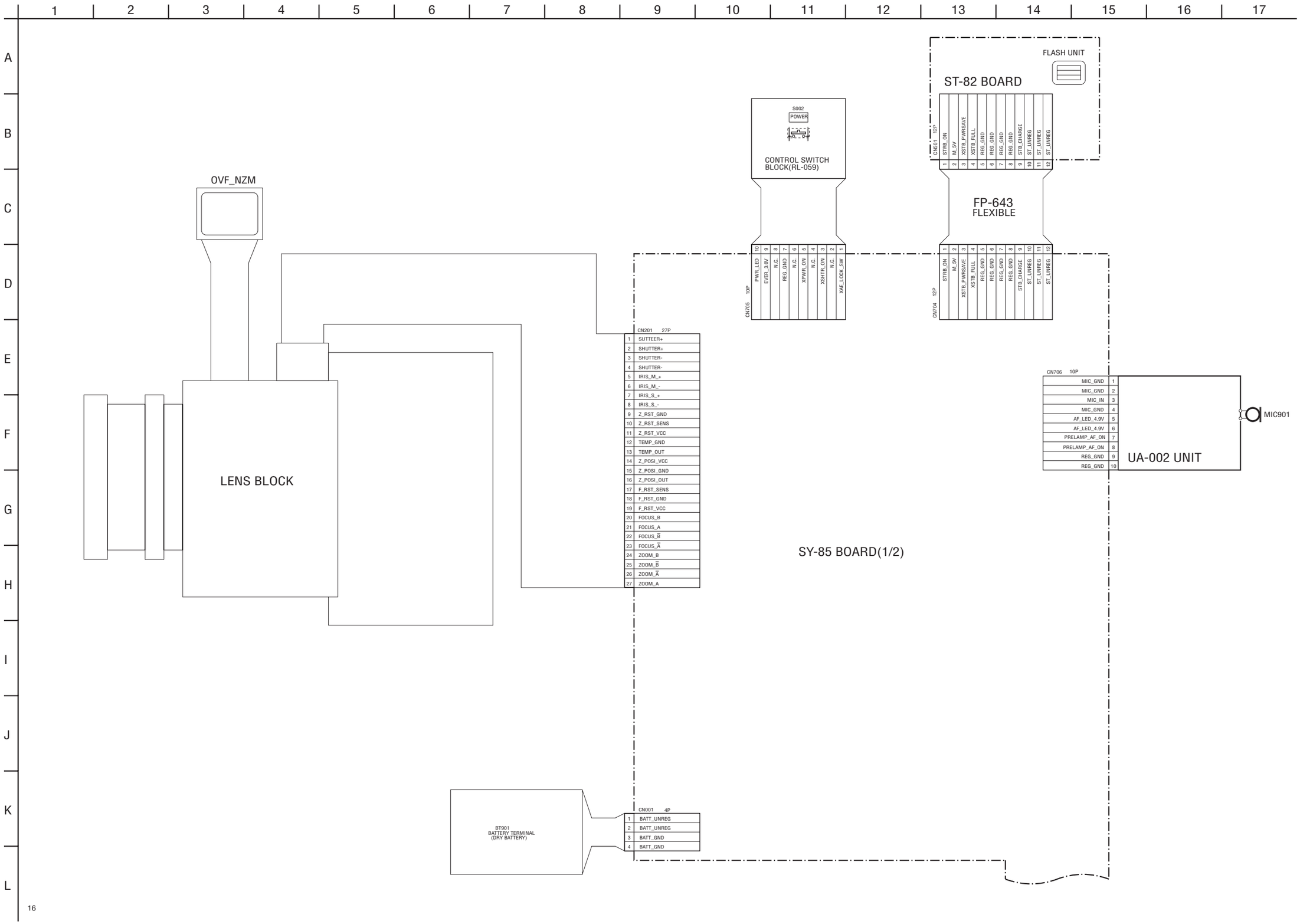
3-4. POWER BLOCK DIAGRAM

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.

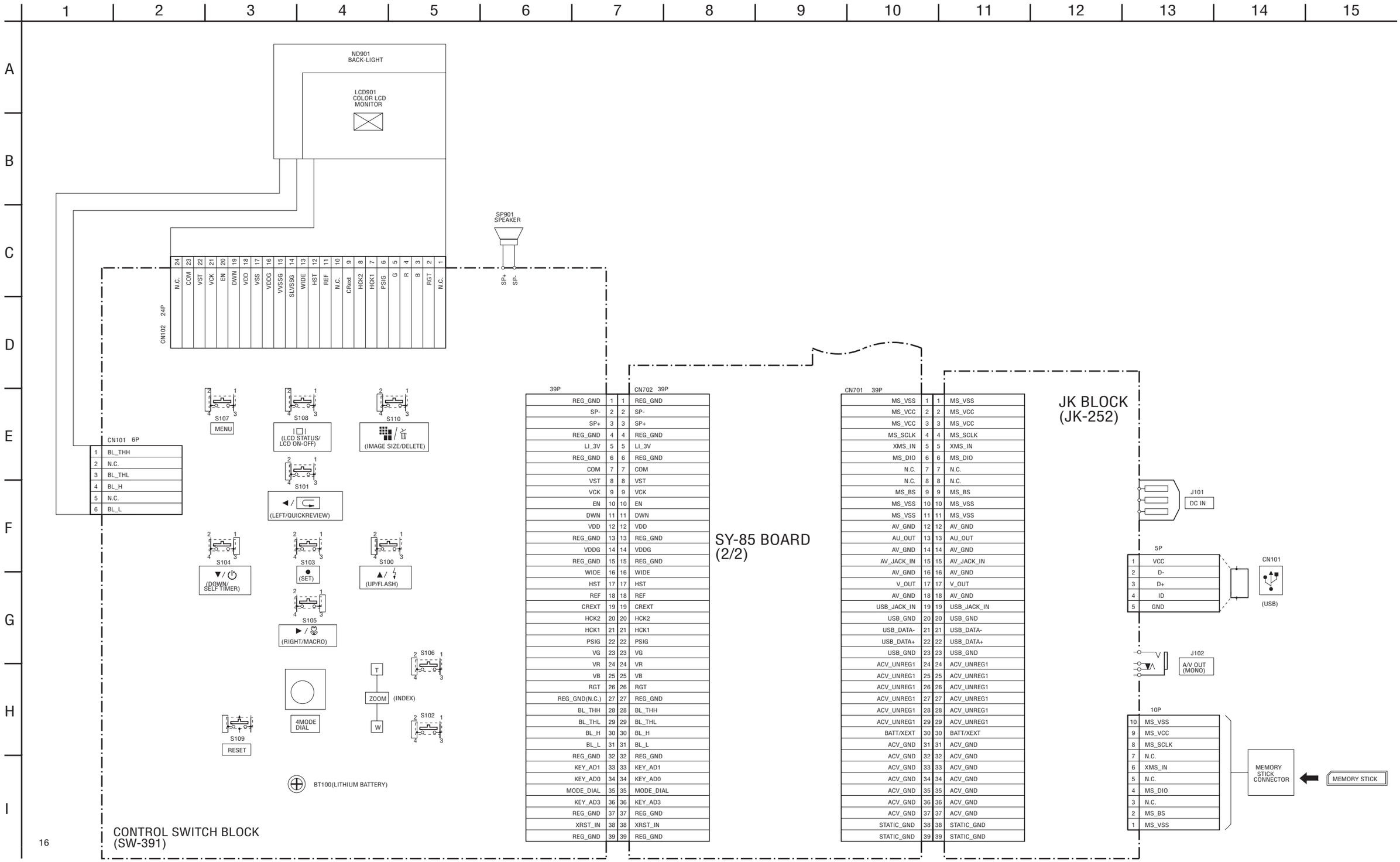


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1/2)



FRAME SCHEMATIC DIAGRAM (2/2)



COVER

4-2. SCHEMATIC DIAGRAMS

Link

- ST-82 BOARD (FLASH DRIVE)
- CONTROL SWITCH BLOCK (SW-391)
- FP-643 FLEXIBLE BOARD
- CONTROL SWITCH BLOCK (RL-059)
- JK BLOCK (JK-252) (JACK)
- UA-002 (MIC, AF LED)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS

COVER

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520

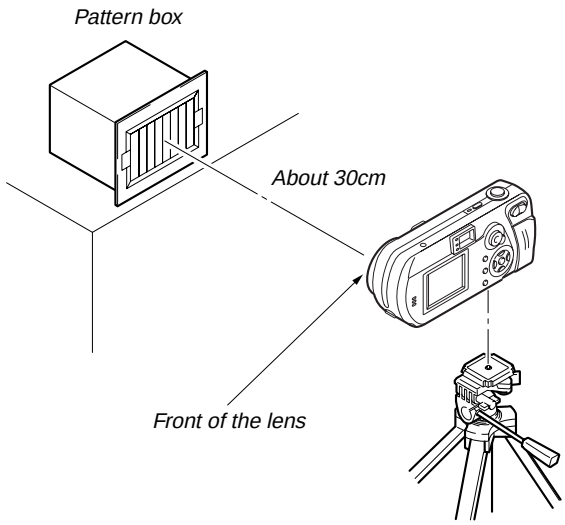
Kinds of capacitor
Temperature characteristics
External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with * differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : VIDEO SIGNAL (ANALOG)
- : AUDIO SIGNAL (ANALOG)
- : VIDEO/AUDIO SIGNAL
- : VIDEO/AUDIO/SERVO SIGNAL
- : SERVO SIGNAL
- Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

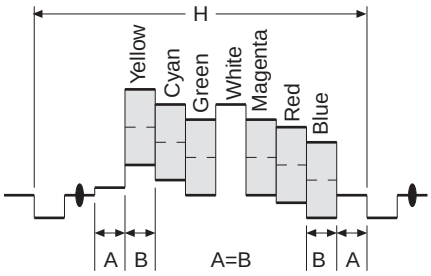


Fig. a (Video output terminal output waveform)

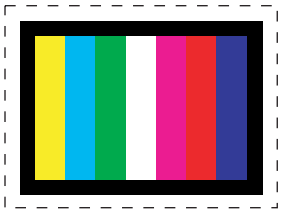


Fig.b (Picture on monitor TV)

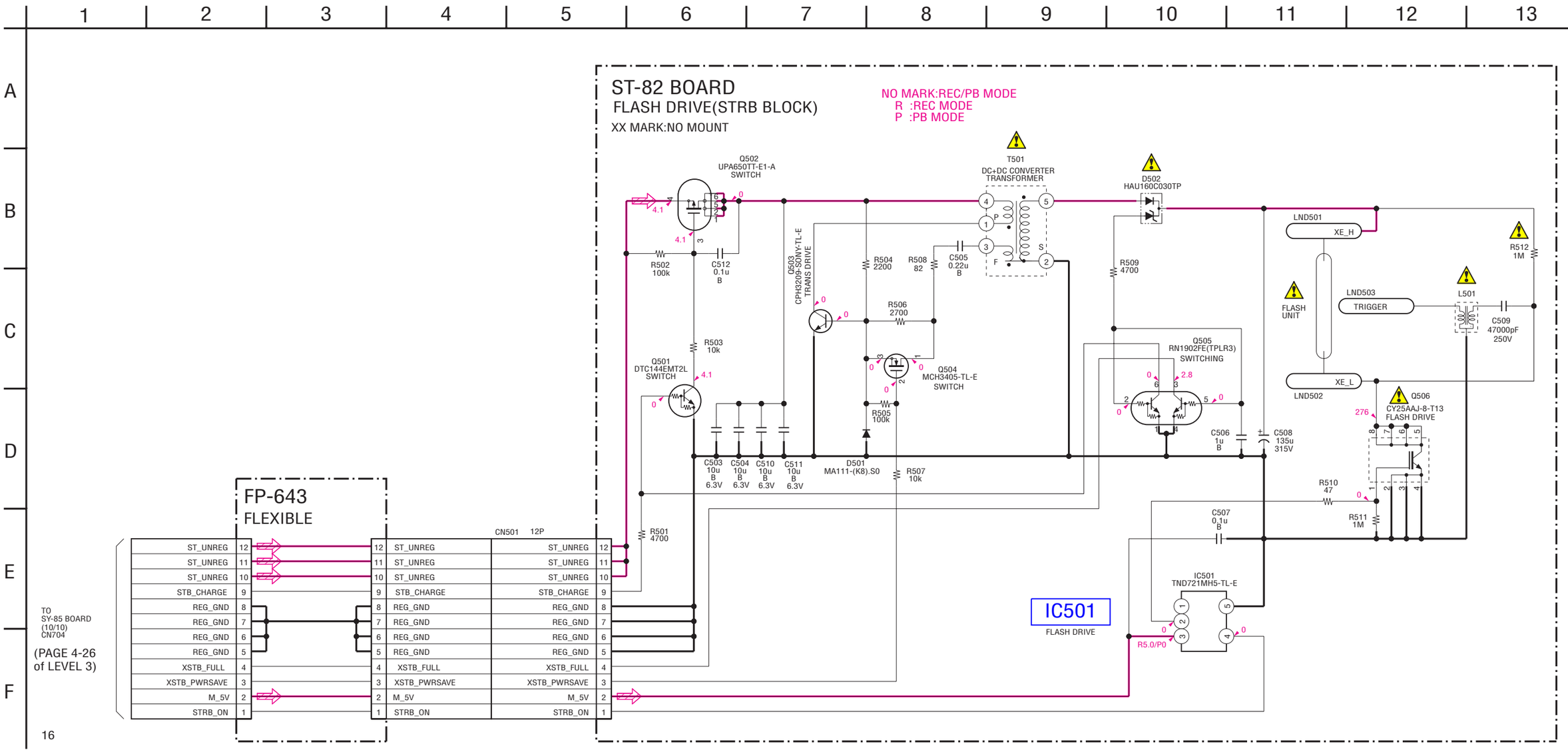
When indicating parts by reference number, please include the board name.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-2. SCHEMATIC DIAGRAMS

For Schematic Diagram

• Refer to page 4-37 for printed wiring board of ST-82 board.

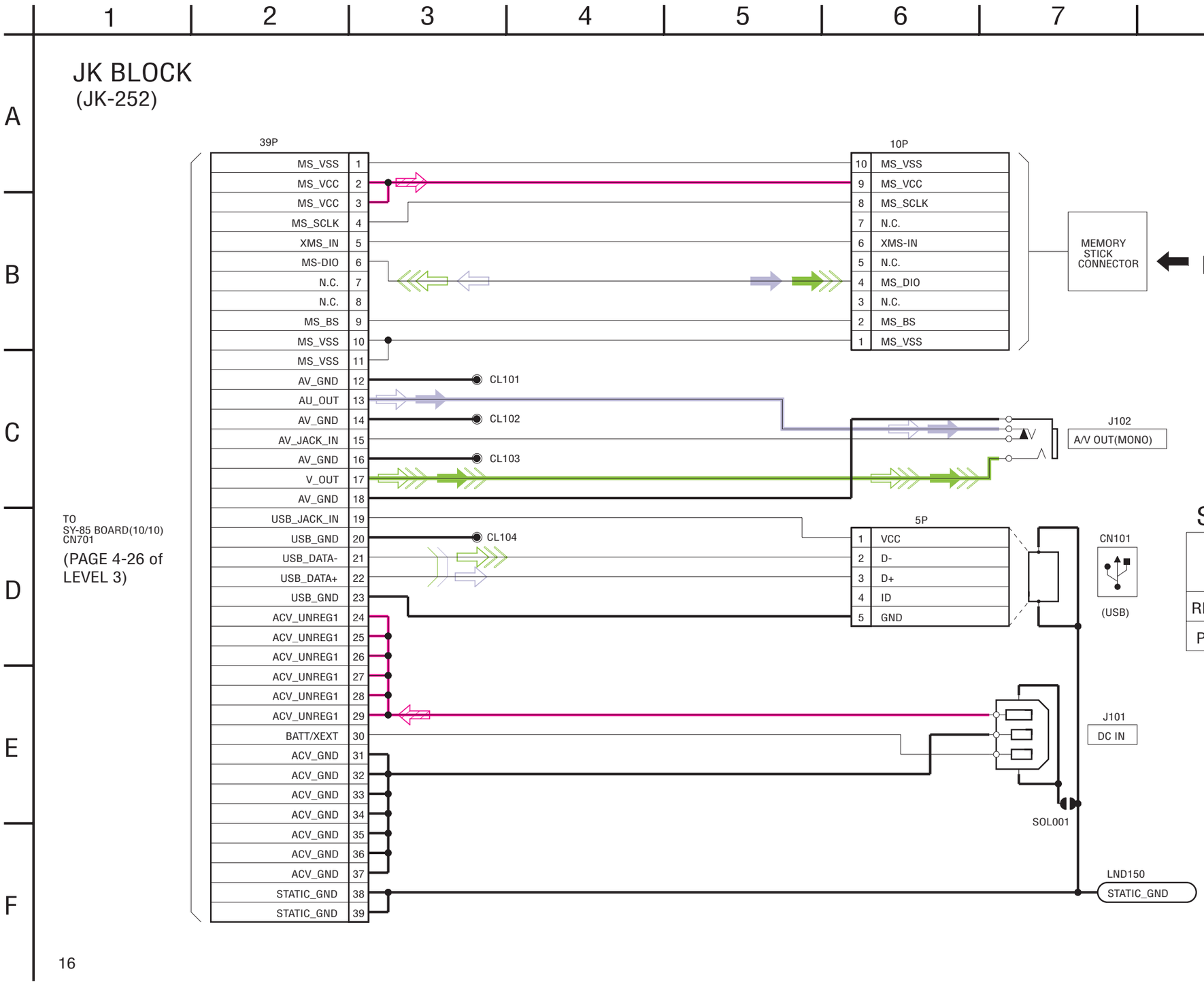


Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Schematic diagram of the SY-85 board are not shown.
Pages from 4-7 to 4-26 are not shown.

For Schematic Diagram

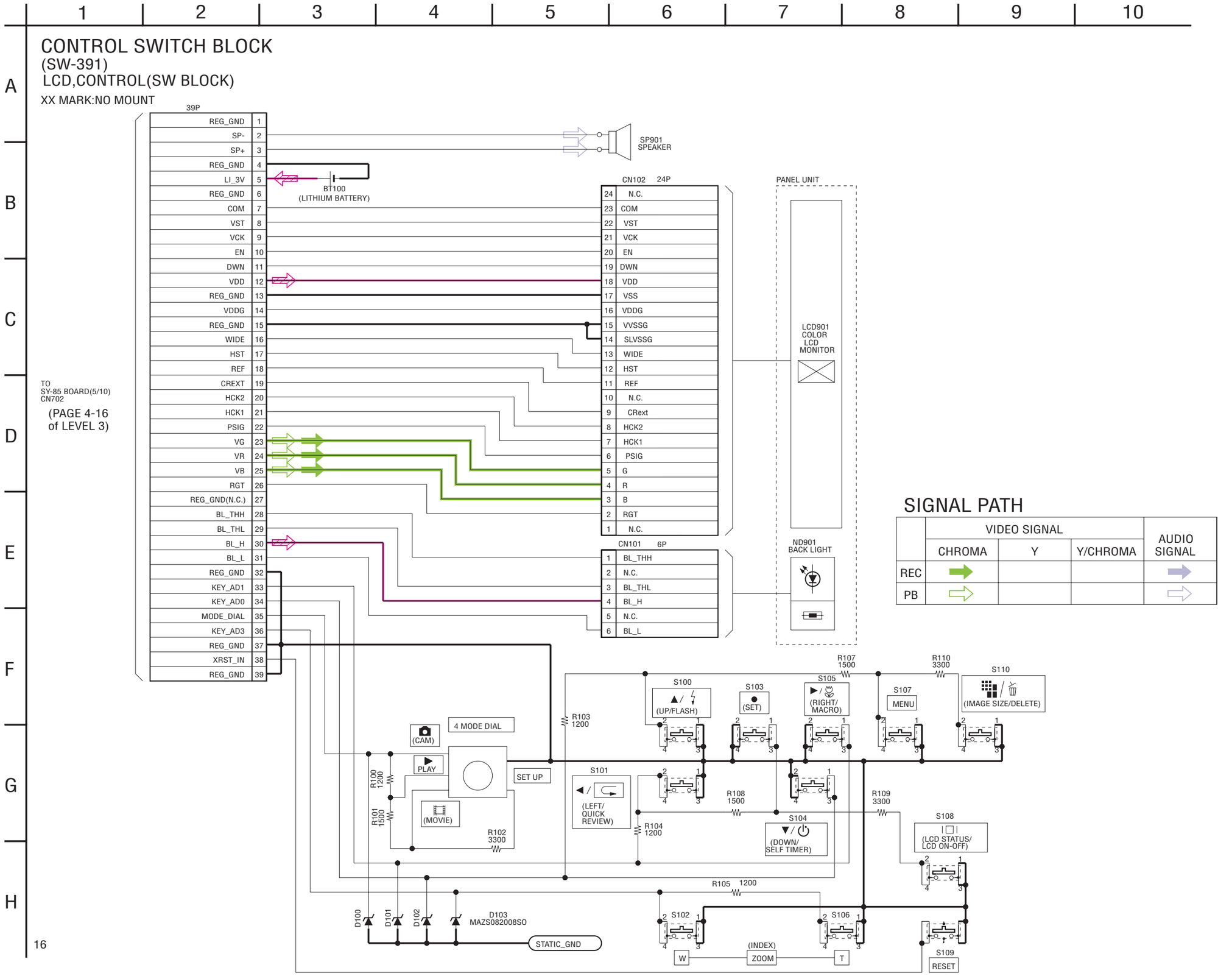
• Refer to page 4-43 for printed wiring board.



SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	➡
PB			⇨	⇨

• CONTROL SWITCH BLOCK (SW-391) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



SIGNAL PATH

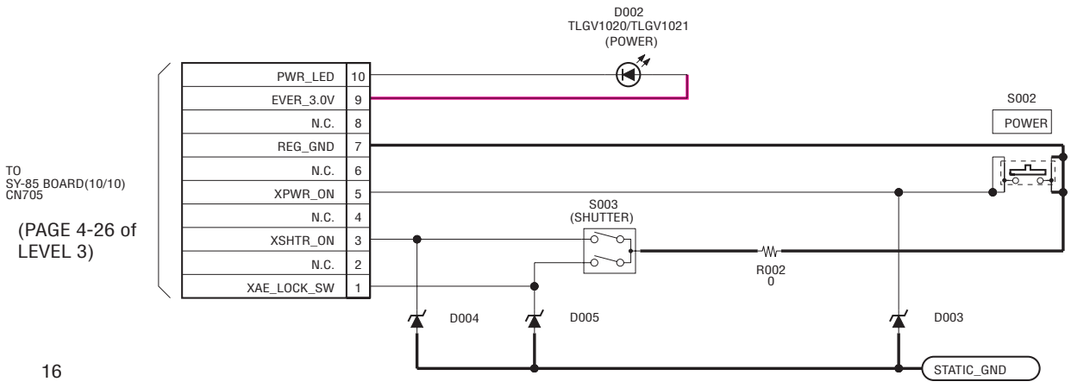
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡			➡
PB	⇨			⇨

• CONTROL SWITCH BLOCK (RL-059) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.

CONTROL SWITCH BLOCK

(RL-059)

POWER/SHUTTER SWITCH

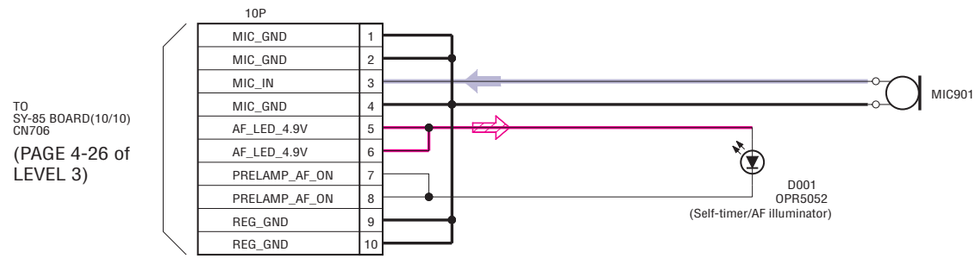


16

• UA-002 BOARD is replaced as a block. So that this PRINTED WIRING BOARD is omitted.

UA-002 BOARD

MIC,AF LED



SIGNAL PATH

	AUDIO SIGNAL
REC	→
PB	

16

COVER

4-3. PRINTED WIRING BOARDS

Link

- ST-82 BOARD
- JK BLOCK (JK-252)
- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION
- CIRCUIT BOARDS LOCATION
- FLEXIBLE BOARDS LOCATION

COVER

4-3. PRINTED WIRING BOARDS

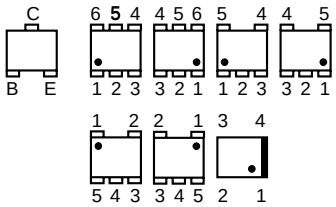
THIS NOTE IS COMMON FOR WIRING BOARDS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

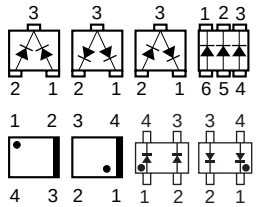
- : Uses unleaded solder.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



BOARD INFORMATION

board name	parts location (shown on page)	waveform (shown on page)	pattern		CSP IC
			number of layers	layers not shown	
ST-82	4-47	–	4	2 to 3	–
JK BLOCK	–	–	1	–	–
SY-85	4-48	4-45	8	2 to 7	IC151, 401, 501, 001, 301, 901

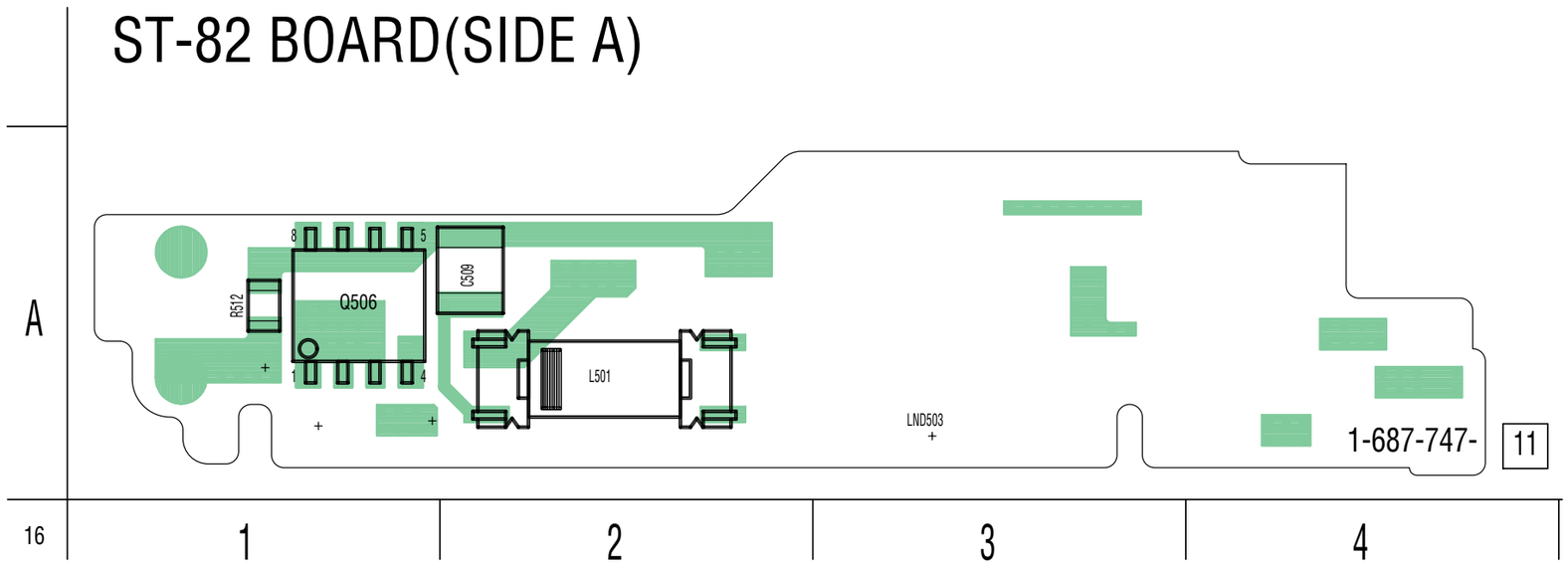
4-3. PRINTED WIRING BOARDS

ST-82 (FLASH DRIVE) PRINTED WIRING BOARD

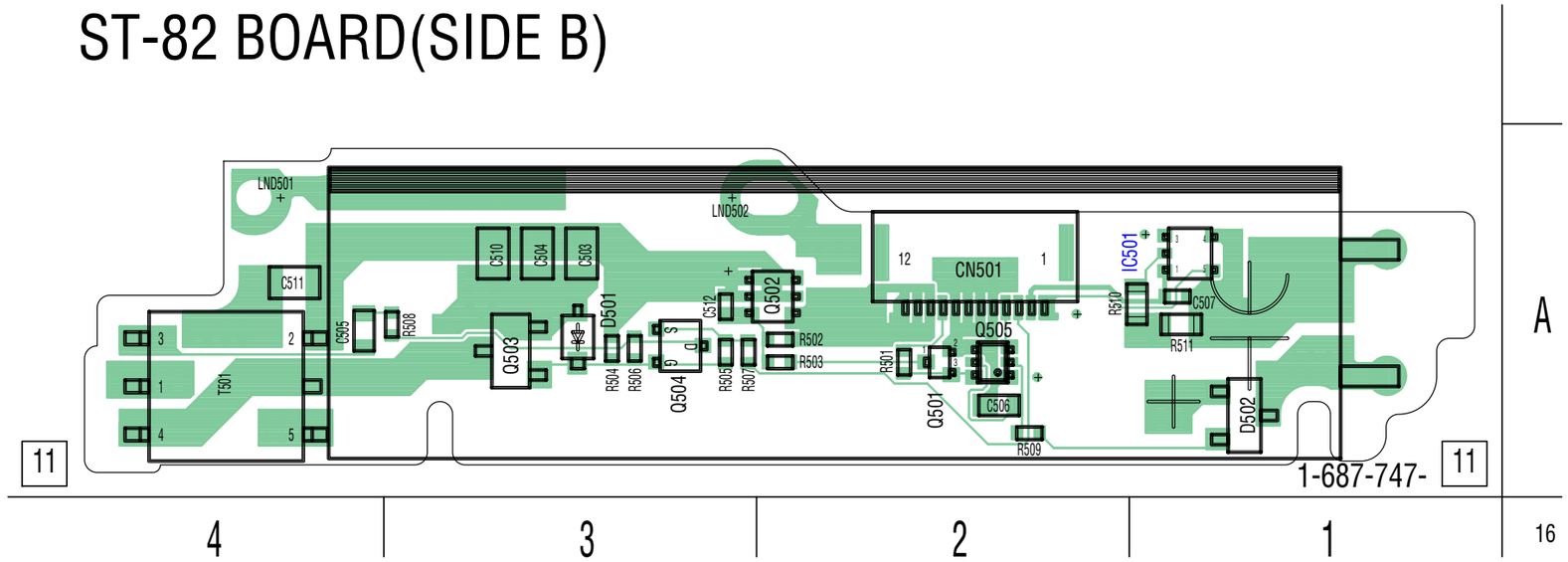
• Refer to page 4-35 for common note for printed wiring board.

• : Uses unleaded solder.

ST-82 BOARD(SIDE A)

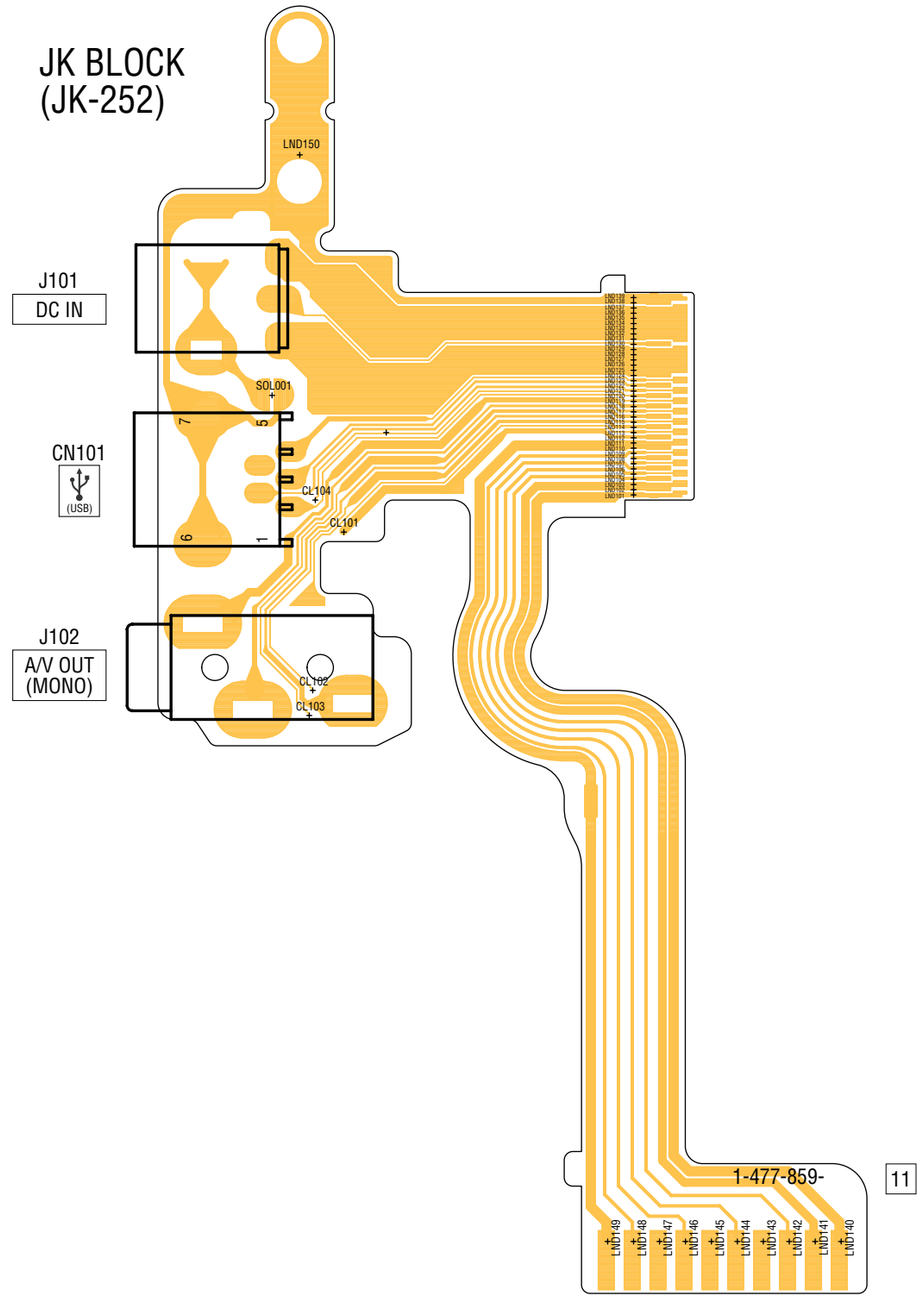


ST-82 BOARD(SIDE B)



Printed wiring board of the SY-85 board are not shown.
Pages from 4-39 to 4-42 are not shown.

JK BLOCK (JK-252) (JACK) FLEXIBLE BOARD



COVER

4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

ST-82 BOARD

* C503	A-3
* C504	A-3
* C505	A-4
* C506	A-2
* C507	A-1
C509	A-1
* C510	A-3
* C511	A-4
* C512	A-3
* CN501	A-2
* D502	A-1
* IC501	A-1
L501	A-1
* Q502	A-3
* Q503	A-3
* Q504	A-3
* Q505	A-2
Q506	A-1
* R501	A-2
* R502	A-3
* R503	A-3
* R504	A-3
* R505	A-3
* R506	A-3
* R508	A-4
* R509	A-2
* R510	A-1
* R511	A-1
R512	A-1
* T501	A-4

Mounted parts location of the SY-85 board is not shown.
Page 4-48 is not shown.

COVER

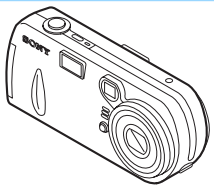
NOTE

5. REPAIR PARTS LIST

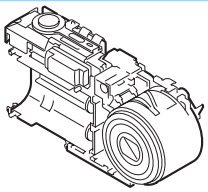
NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS

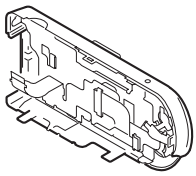


CABINET (FRONT) SECTION



A

MAIN BLOCK SECTION



CABINET (REAR) BLOCK SECTION

Link

ELECTRICAL PARTS LIST

ACCESSORIES

- SY-85 BOARD A
- ST-82 BOARD A

COVER

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model
  AUS : Australian model
  JE : Tourist model
  CH : Chinese model
  KR : Korea model
  HK : Hong Kong model
  J : Japanese model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

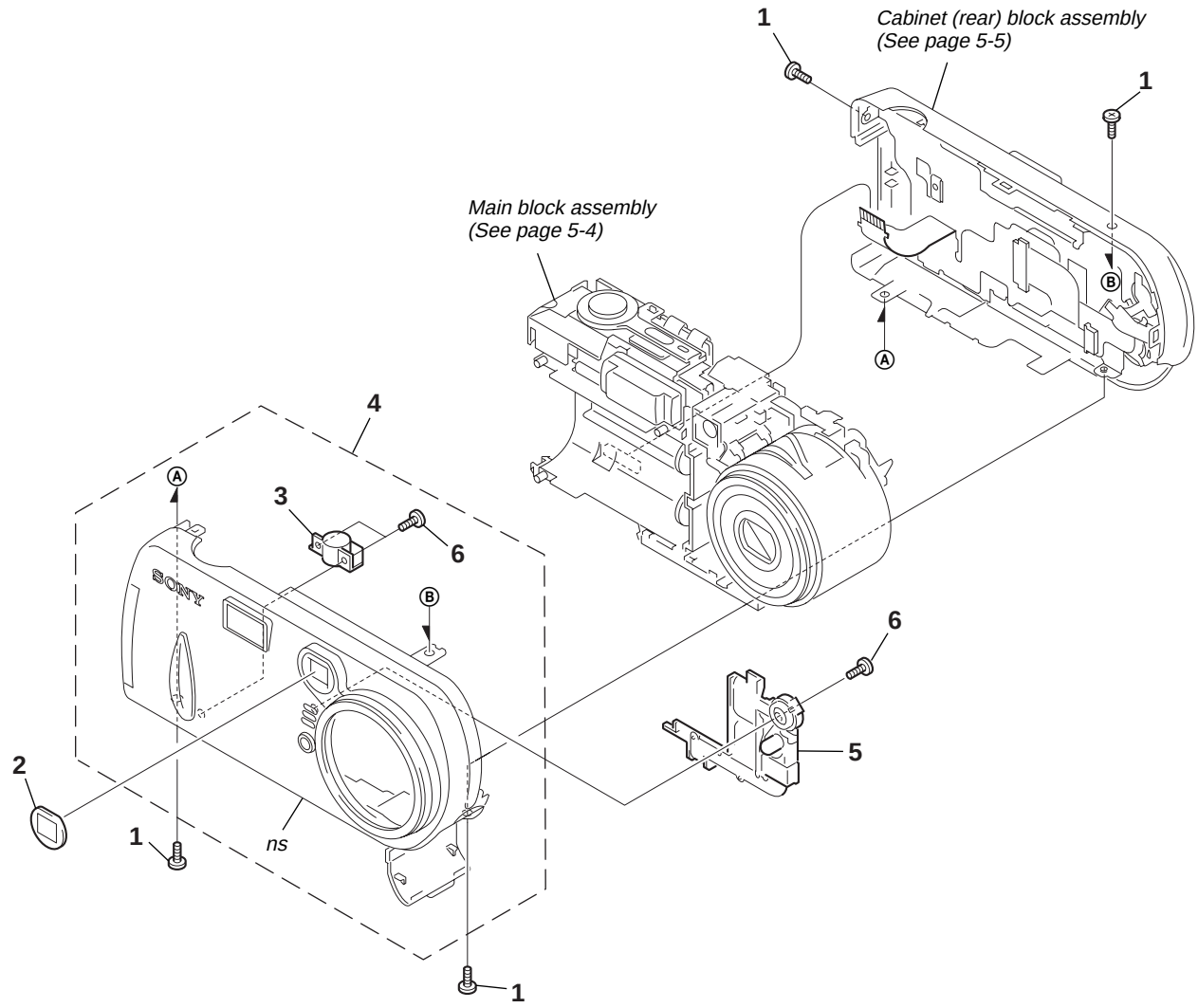
COVER

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

5-1-1. CABINET (FRONT) SECTION

ns : not supplied



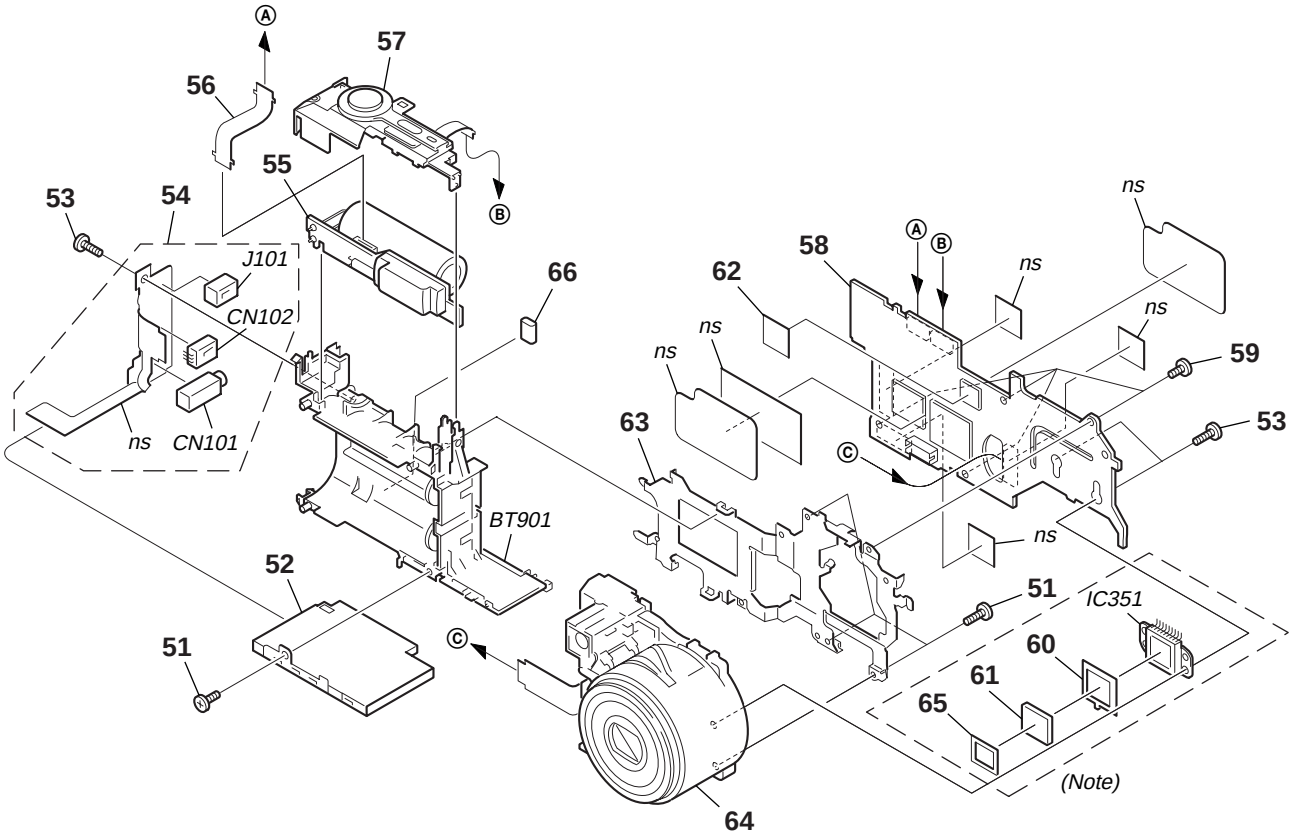
Ref. No.	Part No.	Description	Remarks
1	3-968-729-71	SCREW (M2), LOCK ACE, P2	
2	3-082-168-01	WINDOW, OVF	
3	3-080-977-01	TRIPOD	
4	X-3953-15901	CABINET (FRONT) ASSY	
5	1-477-810-11	UNIT PARTS (UA-002)	
6	3-080-204-21	SCREW, TAPPING, P2	

COVER

5. REPAIR PARTS LIST

5-1-2. MAIN BLOCK SECTION

ns : not supplied



Be sure to read “Precautions upon replacing CCD imager” on page 4-7 when changing the CCD imager.

(Note) See page 2-5 of when installing the CCD block assy.

Ref. No.	Part No.	Description	Remarks
51	3-078-890-11	SCREW, TAPPING	
52	1-815-853-21	MEMORY STICK CONNECTOR	
53	3-080-204-21	SCREW, TAPPING, P2	
54	1-477-859-11	JK BLOCK (JK-252)	
55	A-7078-600-A	ST-82 (S) BOARD, COMPLETE	
56	1-687-751-11	FP-643 FLEXIBLE BOARD	
57	1-477-806-11	CONTROL SWITCH BLOCK (RL-059)	
58	A-7078-684-A	SY-85 BOARD, COMPLETE (SERVICE)	
59	3-078-889-11	SCREW (M1.7)	
60	3-075-085-01	RUBBER (DQ), SEAL	
61	1-758-916-11	FILTER BLOCK, OPTICAL	

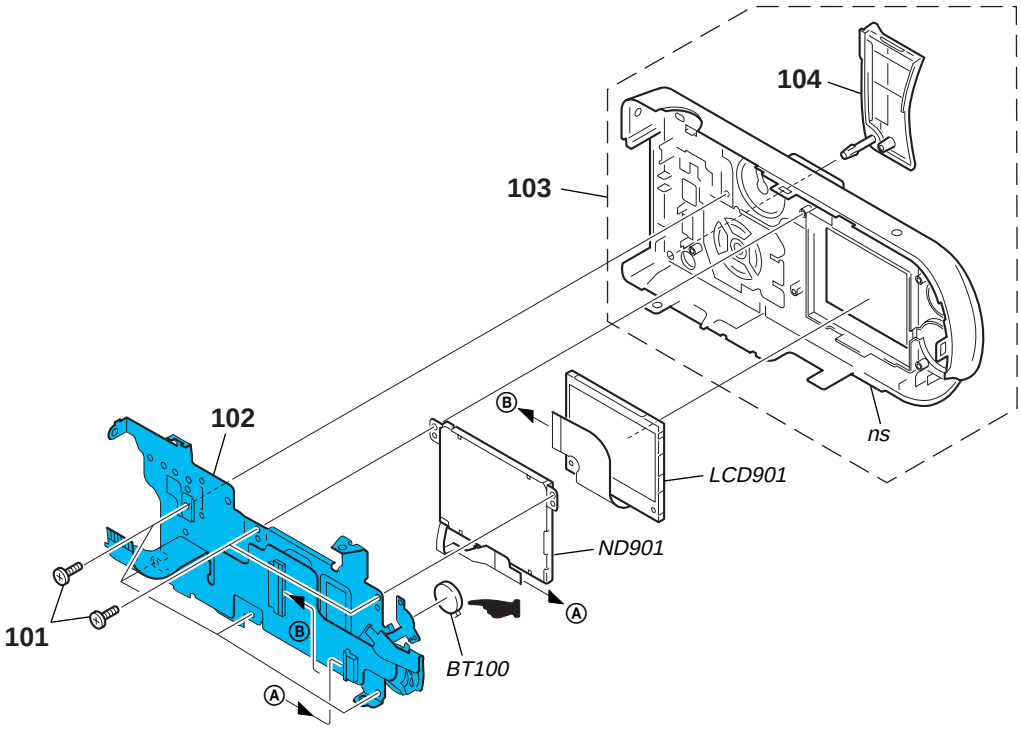
Ref. No.	Part No.	Description	Remarks
62	3-082-136-01	SHEET, SHIELD	
63	3-081-034-01	FRAME, LENS	
64	1-758-925-11	LENS, VIDEO (ED02D)	
65	3-076-569-01	PLATE, LIGHT INTERCEPTION	
66	3-083-057-01	CUSHION (ISB), ELECTROSTATIC	
BT901	1-756-347-11	HOLDER, BATTERY(WITH TERMINAL)	
CN101	1-569-950-31	JACK (SMALL TYPE)	
CN102	1-794-962-11	CONNECTOR, SQUARE TYPE(USB 5P)	
IC351	A-7013-723-A	CCD BLOCK ASSY (CCD IMAGER)	
J101	1-817-331-11	DC JACK 5P	

COVER

5. REPAIR PARTS LIST

5-1-3. CABINET (REAR) BLOCK SECTION

ns : not supplied



: BT100 (Lithium battery) CONTROL SWITCH BLOCK (SW-391) on the mount position. (See page 4-43)

CAUTION :
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Ref. No.	Part No.	Description	Remarks
101	3-078-890-11	SCREW, TAPPING	
102	1-477-809-11	CONTROL SWITCH BLOCK (SW-391)	
103	X-3953-17901	CABINET (REAR) ASSY	
104	3-080-985-01	COVER, JACK	
⚠ND901	1-477-762-11	BLOCK LIGHT GUIDE PLATE (1.5)	
LCD901	8-753-052-23	ACX309AKB-J	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	A-7078-684-A	SY-85 BOARD, COMPLETE (SERVICE)
		**********

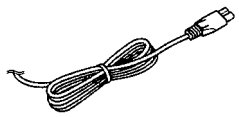
Electrical parts list of the SY-085 board are not shown.
Pages from 5-6 to 5-11 are not shown.

	A-7078-600-A	ST-82 (S) BOARD, COMPLETE			
		**********			
⚠	1-477-803-11	FLASH UNIT			
		< CAPACITOR >			
C503	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C504	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C505	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C506	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C508	1-100-542-11	CAP, ELECT	135uF		
C509	1-137-723-21	CERAMIC CHIP	0.047uF	10%	250V
C510	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C511	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C512	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
		< CONNECTOR >			
CN501	1-816-644-11	FFC/FPC CONNECTOR (LIF) 12P			
		< DIODE >			
D501	8-719-073-01	DIODE MA111-(K8).S0			
⚠D502	6-500-237-01	DIODE HAU160C030TP			
		< IC >			
IC501	6-703-635-01	IC TND721MH5-S-TL-E			
		< COIL >			
⚠L501	1-456-193-11	COIL, TRIGGER			
		< TRANSISTOR >			
Q501	6-550-119-01	TRANSISTOR	DTC144EMT2L		
Q502	6-550-528-01	TRANSISTOR	UPA650TT-E1-A		
Q503	6-550-183-01	TRANSISTOR	CPH3209-SONY-TL-E		
Q504	8-729-056-01	TRANSISTOR	MCH3405-TL-E		
Q505	8-729-053-57	TRANSISTOR	RN1902FE(TPLR3)		
⚠Q506	8-729-053-74	TRANSISTOR	CY25AAJ-8-T13		
		< RESISTOR >			
R501	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R502	1-218-977-11	RES-CHIP	100K	5%	1/16W
R503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R504	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R505	1-218-977-11	RES-CHIP	100K	5%	1/16W
R506	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R507	1-218-965-11	RES-CHIP	10K	5%	1/16W
R508	1-218-940-11	RES-CHIP	82	5%	1/16W
R509	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R510	1-216-805-11	METAL CHIP	47	5%	1/16W
R511	1-216-857-11	METAL CHIP	1M	5%	1/16W
⚠R512	1-216-121-11	RES-CHIP	1M	5%	1/10W
		< TRANSFORMER >			
⚠T501	1-437-737-11	TRANSFORMER, DC-DC CONVERTER			

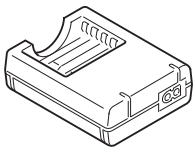
Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Checking supplied accessories.

Make sure that the following accessories are supplied with your camcorder.

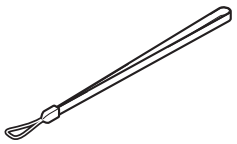


Power cord (1)(AUS model)
⚠ 1-696-819-11
Power cord (1)(AEP,E model)
⚠ 1-769-608-11
Power cord (1)(CH model)
⚠ 1-782-476-11
Power cord (1)(UK,HK model)
⚠ 1-783-374-11
Power cord (1)(US,CND model)
⚠ 1-790-107-22
Power cord (1)(JE,J model)
⚠ 1-790-732-11
Power cord (1)(KR model)
⚠ 1-776-985-11

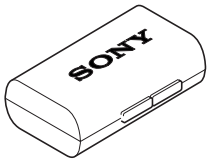


Battery charger (BC-CS2)(1)
(US,CND,JE,J model)
⚠ 1-477-814-11
Battery charger (BC-CS2)(1)
(AEP,UK,E,HK,AUS model)
⚠ 1-477-814-21
Battery charger (BC-CS2)(1)
(CH, KR model)
⚠ 1-477-814-31

Connection cord
(AV Cable 1.5m)(1)
1-824-111-11

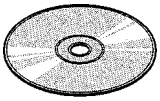


Hand strap (1)
3-070-841-01

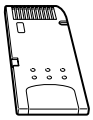


Battery carrying case (1)
3-074-757-01

Cord with connector (1)
(USB 5P)
1-827-038-11

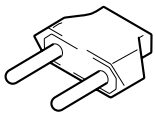


CD-ROM (USB DRIVER) (1)
(SPVD-010)
(AEP,UK,E,HK,AUS,
CH,JE,KR model)
3-078-942-03
CD-ROM (USB DRIVER) (1)
(SPVD-010 (I)) (US,CND,J model)
3-078-943-03

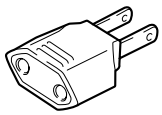


Memory stick (1)
(MSA-16A)
(not supplied)

HR6 (size AA) Ni-MH
batteries
(not supplied)



2P conversion adaptor (1)
(JE model)
1-569-007-12



2P conversion adaptor (1)
(E model)
1-569-008-12

- Abbreviation

CND	: Canadian model	JE	: Tourist model
HK	: Hong Kong model	KR	: Korea model
AUS	: Australian model	J	: Japanese model
CH	: Chinese model		

Other accessories

3-080-877-01 MANUAL, INSTRUCTION (JAPANESE)(J)
3-080-877-11 MANUAL, INSTRUCTION (ENGLISH)
3-080-877-21 MANUAL, INSTRUCTION (FRENCH/GERMAN) (CND,AEP)
3-080-877-31 MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (AEP,E,JE,KR)
3-080-877-41 MANUAL, INSTRUCTION (ITALIAN/DUTCH) (AEP)

3-080-877-51 MANUAL, INSTRUCTION (CHINESE) (E,HK,CH,JE,KR)
3-080-877-61 MANUAL, INSTRUCTION (RUSSIAN/SWEDISH) (AEP)
3-080-877-71 MANUAL, INSTRUCTION (ARABIC) (E)
3-080-877-81 MANUAL, INSTRUCTION (KOREAN) (KR)

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2003B1600-1
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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2003.02	Official Release	—	—